The Builder.

VOL. XVIII.—No. 934.

Shades and Lights in London. St. Lukes's: Whetstone Park: St. Clement's Danes.

WITH CHRISTMAS, which brings with it the termination of our volume for 1860, comes the repetition, in numerous quarters, of statements made by us years ago as to the condition of the homes of the labouring and poorer classes in various parts of London. Thus, Mr. Harvey, chairman of the West London Union, writes to the leading journal to describe the state of parts of Holborn. He says the relieving officer and one of the guardians of the union recently visited Plumtree-court, Holborn, which contains twenty-seven houses, without back yards, and, with few exceptions, without back lights. These houses were occupied by 676 men, women, and children. In one room, 10 feet by 13 feet, and 8 feet 6 inches high, there were thirteen persons living and sleeping, viz., two men, five women, and six children. In another house, 17 feet long and 16 feet wide (including the passage), with ground-floor, first-floor, and attic, there were sixty-nine persons living and sleeping, with only one convenience in the basement. On another occasion, when the officer visited a house in this court, between twelve and one o'clock in the morning, for the apprehension of a man who had deserted his wife; in attempting to go into one room he was compelled to wait until the inmates had risen from the floor behind the door, so that the door could be opened. The people lay so thick on the floor that he had to be cautious in stepping between them. In this room there was one child suffering from the measles and another from the small-pox. On opening the door, he goes on to state, the stench was so great that the police officer who accompanied him was obliged to withdraw.

Seven years ago we described this same place in words differing little from those now used by Mr. Harvey:—

"Leaving Field-lane," our account ran, "and crossing Holborn into Shoe-lane, opposite the wall of St. Andrew's Churchyard, you reach the entrance to Plumtree-court, which has long been the haunt of fever: this court extends a considerable distance towards Farringdon-street, when it goes off at right angles to Holborn: the court is very narrow, and the drainage very imperfect. A sink at the bottom of this pestilent hole receives the greater part of the refuse of the place: it is often stopped, and then a pool of considerable extent is formed. Pulling the latch of the outer door of one of the houses here, and then entering the room on the left, with the assent of its occupants, we found an atmosphere so stifling that we were forced for a moment to retreat. There were two beds in the room: in one, which seemed to have heads all round it, were no fewer than nine women and children. They were stowed so oddly and so thickly, that it was not an easy matter to count them even by the strong light of the policeman's lantern. In the other bed were a man and a lad; and in a small room, or closet, leading from this room, three other persons were sleeping. There was little ventilation. Had there been *none*, assuming that each respiration is 40 cubic inches (Menzies), the respirations twenty a minute (Haller), and that the existence of ·08ths of carbonic acid is destructive (Liebig),* *the occupants of the front room must have died in eight hours!* We will not trouble our readers with the inference, nor need we give them further details of this quarter. Pondering on what we had seen, and weighing the possibility of improvement before the *infant-school* has done its work, we were glad to make our way homeward to freer air."†

We have engraved views by the dozen, showing to the eye the overcrowded state of houses now again pointed to as full of danger because of the number of their inhabitants, nothing having been done to bring about a change: indeed, in some of the London parishes, we have reason to believe that the overcrowding is greater than it was five years ago. Parish authorities do not seem to be aware that the Removal of Nuisances Act requires that whenever the medical officer of health, if there be one, or if none, whenever two qualified medical practitioners shall certify that any house is so overcrowded as to be dangerous or prejudicial to the health of the inhabitants, these inhabitants consisting of more than one family, the local authority *shall* (not *may*) cause proceedings to be taken before the justices, to abate such overcrowding, and the person permitting it is rendered liable to a penalty.

Leaving the authorities, then, to do their duty, while we venture to pursue the course we believe to be ours; we would give a few particulars of a parish little known to the majority of readers,—St. Luke's in the central portion of London. Many have heard of the benighted condition of Golden-lane and its neighbourhood, from the often-repeated appeals of Mr. Rogers, the incumbent of St. Bartholomew's district; while others of an antiquarian turn may remember accounts of the time when Golden-lane and its surrounding parts were a fashionable locality,—when the theatre of Queen Elizabeth's days existed, and green trees and fields stood in the place of the endless rows of houses and other buildings which now exist. Generally, however, except to the immediate dwellers, little is known of this, perhaps one of the poorest and most neglected parts of the metropolis. It is most densely populated. From Old-street, an important thoroughfare ("the old highway from Aldersgate for the north-east parts of England, before Bishopsgate was built"), branch on both sides many streets, most of them narrow: from these run courts and alleys teeming with an immense population, chiefly in a poor and forlorn condition. Strange and dreary is the appearance of these avenues, in spite of the bright sunshine. Let us, however, make a more minute examination,—walk to Golden-lane and its tributaries, and see how these are cared for. Leading from the lane in Cherry-tree-court, a place barely 4 feet in width, are seven houses on one side and a high wall on the other. Externally the houses are not in bad repair, but in the interior their dirty and dilapidated condition is remarkable. In one small back room was a little boy nine years of age, and a girl some years younger, who had scarcely a rag of covering on them: there were two other children out, we were told, working in the street. Those at home crouching over the fire were altogether uninstructed. Their mother made a living in the markets, they told us, and their father had run away. A wretched bundle of rags in a corner served for bedding. In a back yard, unpaved and broken, was the overflow water from cesspools, the closets stopped and in a bad condition: there was only surface-drainage, and that of an incomplete description, and yet every room of these premises is occu-

* See First Report of Metropolitan Sanitary Commission, page 127.

† See, also, "London Shadows," by George Godwin; page 15. 1854.

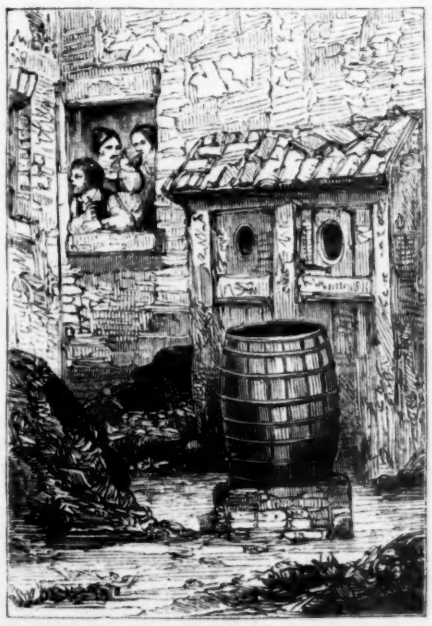


Fig. 2. A Pleasant Garden.

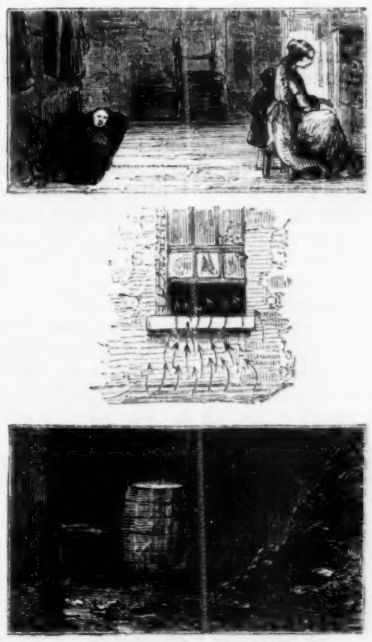


Fig. 1. The Cellar and its Produce.

Fig. 3. Home Comfort.

pied by a family, some of them consisting of seven, eight, or nine persons. In most of the houses the water "ran short;" on Sundays "the water is turned on for about five minutes, but sometimes it does not reach them." The landlord of this and a large extent of property here and in other quarters has been asked times out of number to put the place into a little better order: he, however, receives the rent, promises attention, but does nothing. The whitewashing of the narrow, dark staircases of those houses and of the walls, which are at present black with accumulated smoke and dirt, would entail but a trifling outlay. We trust that the day is not far distant when compulsory drainage, *thoroughly carried out*, will be made a rule in connection with the dwellings of the poor. Remarking that the scavengers of St. Luke's perform their duty very badly, we pass on to Hartshorn-court, a singular locality, which, with the parts adjoining, is inhabited to a great extent by thieves and the most dangerous characters. This is the entrance to a labyrinth of courts which, like the intricate workings of a Gloucestershire iron-mine, lead in all manner of curious and mysterious directions. In front of five houses is a kind of square, which formerly has probably been occupied as gardens: here swarms of children peer curiously out, neglected little creatures, so forlorn, so seemingly helpless for good, that the first impulse is to ask—What is to become of them? What business, according to present arrangements, are they fitted for? What, except by chance, is there for them but beggary or the prison?

The houses mentioned are single houses (one room deep), without any openings at the back. Like those previously alluded to, these dwellings are, so far as exterior is concerned, not in bad repair, but anything worse than the interiors cannot be easily imagined. Let us step up one of the dark narrow staircases: in one room, on the door being opened, a man had risen hastily from his bed: a strong active-looking woman was there, and from the mass of rags swarmed a number of children (it was about ten o'clock in the morning). Few could look at these helpless little things without an aching heart: the faces, not ill-shaped, were massed with dirt, and they had on scarcely a rag of covering; there was no furniture in the room, the window was plastered with mud; and the floor, although this able woman was here, had probably not been washed for months. The tenant complained of the landlord's neglect. Modestly, we ventured to hint that if the wife were thoroughly to clean even the broken glass of the windows, and maybe, give the floor a good washing, when the landlord next called for his rent, he would be so much astonished at the contrast that he would set some one to put the walls in order immediately. The tenant stated that his wages for working in the market are small and uncertain, and with a number of children "I cannot pay much rent," he said, "or do you think that I would stop in such a place as this? The dirt you speak of is the least evil, from night till early morning the place has no peace; at times it would take a dozen policemen to quell the tumult." This is no doubt true, for most lawless and defiant is the population here.

In all parts there are apartments in a similar condition; no attempt is made at ventilation, there are no back windows, no openings to the roof; dirt and crowding, particularly in the upper rooms, produce an atmosphere unpleasantly visible.

A great portion of the open space is occupied by a large dust-heap, which consists of the worst kinds of refuse, that, we are told, has been in the course of collection for several years, and which is daily added to by such matters as the costermongers may not find convenient to sell. There are no dust-bins provided, so that, as a necessity, the refuse of the houses is added to this putrid heap, which is made a sort of *play-ground* for the children, who, in their way, *enjoy* what seems to them a remarkable benefit.

For a population of ninety and more persons, there are only two closets, in a most filthy condition, over which is the water-tank. How can people be clean or decent under such circumstances? Refuse is left in all directions, and the roadways, in other weather than this, are deep with poisonous and stagnant water. Turning sharply to the left of the *play-ground*, we come to Little Cheapside. In this and other places, close by, may be seen groups of houses without proper accommodation; even the surface drainage is not good; the pavement abominable, and the whole of the space around is polluted with cesspools.

We look into many houses and tenements, and hundreds might be described so much alike, that an account of one would almost serve for the other. Range after range of houses, badly constructed; the roads and yards unpaved, are patched in such a manner as to be of but little use; the soil saturated with the most unwholesome matters, to a considerable depth; room after room, to the extent of thousands, all loaded with dirt; the same pictures of broken ceilings and walls; half-naked and half-fed children; old witch-like women, crouching by the fire-grates; men entirely or partially drunk, lying on shavings, or rags, on the floors, nearly all without furniture,—these form the picture. Without particularizing, we will jot down slightly a few characteristic features.

Twelve houses form a narrow court, sunk below the regular surface; there are two closets only for all those—there was, a short time ago, only one. Here dwell persons who might give information respecting missing dogs; others who collect in the streets; and there is more than suspicion that some of the persons who have lived here, have been engaged in the horrible employment of skinning cats alive. Gladly do we escape from the din of barking dogs, and the unpleasant physiognomy of the inhabitants. Let us proceed to a fresh spot.

Another narrow court, in which are several houses, having cellars below them. In passing, bad as have been the smells already experienced, they seem faint in comparison with that which rises from the grating. By means of the open windows above this we see a sickly woman, and a child lying in a corner still more sadly stricken. This is not to be wondered at, for descending into the cellar will be found an untrapped and dirty closet (Fig. 1), the water-cask close to it, and an accumulation of other refuse, which had been allowed by the scavengers to remain for six months. Up the staircase, by the crevices of the floors, by the open windows, the fever-bringing gases make their way into the rooms.

In one of these houses, similarly situated, where the people seemed better off than usual, we asked a woman if she thought that water kept in such condition could be fit for use. The reply was,—"It's excellent water, sir; I would not mind drinking a gallon of it." On endeavouring to explain how soon water is rendered unwholesome by the action of bad air, she said,—"I am sure I don't know, sir, but it is beautiful water though." This ignorance is one of the difficulties to be encountered, and stops the way of improvement.

Let us make another sketch. It is a square room, the walls of which we can touch either way by stretching out the arms; close to the window is a closet, untrapped, and cesspool; the unpaved little yard is overflowing (Fig. 2). In rooms like this a family of six persons may be found. Such is the unpleasant effluvium which arises from the back premises, that people cannot, particularly in summer time, open the window.

We peeped into another interior, dirty beyond description,—a man on the floor asleep,—the children out at *work*, which probably consists of turning "catherine-wheels," or some less honest employment. Onions and other vegetables are lying about to be got ready for sale. The atmosphere, if possible, worse than usual; the ceiling and walls, black as the back of a chimney. The fireplace and chimney project, and a large portion of the upper part of the bricks has been removed; so that the smoke, in a great measure, spreads over the walls and roof. (Fig. 3.) On the person here waking up, and some remarks having been made that it would be better for health to have a little ventilation, he at once said, "certainly," and bodily lifted out the window-frame, and placed it against the wall.

Words and sketches fail to give an idea of what is going on around us. Nothing but a personal inspection can afford a just notion of the state in which these poor and often ignorant people are allowed to be.

In one small room, without any separation, live nine grown-up persons and two children,—eleven in all. There are the mother, and married sons and daughters, and the children, all living in this promiscuous manner.

In some parishes their sanitary arrangements are much more effective than others. In St. Luke's the relative state is not good; when saying so, we must, however, not omit to add that the district is overrun by poor, and that the chief body of ratepayers are but ill able to meet the heavy demands made upon them. There are, however, matters which depend on mere sanitary inspection; and where the forcing of the proprietors of houses to do what is right, might not only be beneficial to the inhabitants, but, by preserving health, be a saving in the poor-rates. As one example of the inefficiency of the parish officers of health, we will mention Wood's-place, Chequer-alley, leading to Whitecross-street. Here, at a very short distance from the houses, is a water-closet, which, at the time of our visit, was overflowing on the ground. The people say that the effect upon them is very bad, and that maggots crawl from the court into the houses. This state of affairs has continued for a long time, and the parish authorities have had notice of it for more than eight months, yet nothing has been done. In other cases it is complained that half-measures are used, and that when improvement has been made, there is not enough attention shown to see that order is kept. To this important question we may return at another opportunity. Weary, oppressed, and pained beyond expression by the poisoned air and the sad sights which have come to view, we will now only look at one more group of houses. In an ill-paved yard is a closet, the cesspool is overflowing, standing in pools, and running down the gutter, and into a smith's premises. The smith says that at times he is quite flooded with it, and that at the last attack of cholera, himself and two sons were in the hospital ill with this disease at the same time, and that deaths happened in the adjoining houses. "But see," said a respectable-looking old man, "the state of the place a little way to the back. I have a large family, which in a measure forces me to live in such a place. Look at the house adjoining; a drunken man, if he fell, would knock the wall out; there are two closets overflowing, the dust and other refuse are inundated; close to this is the window of my bedroom; no one would credit the atmosphere we breathe. I have been to the country to work, and when I returned last Saturday night, I thought I should have been poisoned; and complaint is useless." Mr. Rogers' schools, excellent in their arrangements and good in their management, and a harbour for the houseless in Playhouse-yard, are bright spots in this darkness.

In Whitecross-street—a wonderful market for the poor at mid-day—the crowd is enormous, but on a Saturday night you might almost walk on the people's heads.

Various interests are antagonistic to the rapid improvement of the dwellings of the poor to which we have referred; but the statesman will be a benefactor to his country, who will with firmness and vigour grapple with the monstrous evils which so much need remedy. The important points to be aimed at are—

1st. Power to overlook houses let in tenements.

2nd. The power of preventing the letting of such houses to more persons than the amount of space will healthfully admit of.

3rd. The enforcement of the removal or improvement of houses which are shown to be arranged on wrong sanitary principles, or where drainage is in such state as above referred to; and

4th. The establishment of Ragged Schools—the provision of means for the removal of the youth of both sexes who are placed in situations which leave no hope, and other measures which have been often referred to by us before.

It seems, however, clear, that in order to give parishes such as St. Luke's fair play, we should have an amalgamation of all the parishes of the metropolis, rich and poor, so that those which are ill-conditioned may be assisted by others more prosperous.

That our review may not be wholly a dark one, we must not omit to note some of the good things that are in progress in various parts of the metropolis. In St. Giles's, once in such evil repute, the schools and other buildings which have been reared during the last twenty years are creditable to all who have been concerned. In other directions we are glad to note improvement, and that in various neighbourhoods, schools, churches, and improved buildings are springing up. Every one has heard of Whetstone-park, a place heretofore always infamous. It consists of a row of houses, between Lincoln's Inn and Holborn. These buildings are of much older date than any portion of Lincoln's-inn-fields. We well remember the place some years since, when its badly-paved, dirty, and evil state was notorious. We now find the place carefully swept; boards are posted with directions to prevent the throwing out of refuse, and in the centre of this once-neglected spot a Ragged School has been established.

Great alterations have taken place here in a comparatively short period. In 1735, the few persons who inhabited Lincoln's-inn-fields were obliged to apply to the Legislature for permission to rate themselves, for the purpose of getting rid of several nuisances. On this occasion evidence was given that, forty years before, the site had been all in grass. About 1705, that part which bounds the Terrace-walk of the society of Lincoln's-inn, was railed; but in 1734, quantities of rubbish were brought from all quarters, and thrown there. The space near the Turnstile was infested by persons who let wretched horses for a half-penny a ride. The riders' limbs frequently came to damage. Besides, the fields were used as a place of exercise for the horses of richer persons, and in consequence accidents were of frequent occurrence.

The *Loyal and Impartial Mercury*, of September 1, 1682, has the following paragraph:—"On Saturday last, about 500 apprentices and such like having got together in Smithfield, went into Lincoln's-inn-fields, where they drew up, and, marching into Whetstone-park, fell upon the lend-houses there, when having broken open the doors, they made great spoil of the goods: of which the constables having notice, and not finding themselves strong enough to quell the tumult, procured a party of the King's Guards, who dispersed them, and took eleven, who were committed to the new prison. Yet on Sunday night they came again, and made worse havoc than before, breaking down all the doors and windows, cutting the feather-beds and other furniture to pieces."

The Ragged School which has been opened here is very useful, and is well attended,—some evenings of the week by boys, and on the other evenings by girls. It is most desirable that the school should be open during the day; and this could be readily managed, should sufficient funds be provided.

Close by, namely, in Clare-market, a more important establishment has been opened through the exertions of the Rev. C. M. Robins, the incumbent of the district. A row of six houses, known as the Colonnade, has been taken, put into good repair, made to communicate, and decorated with texts and otherwise.

On entering the place we find ourselves in a commodious room, comfortably furnished. Some very good engravings hang upon the walls. In the upper story is a sleeping-room, in which are several beds. The fittings of this apartment are remarkable for their neatness and good taste. This part of the building is a refuge for orphan and destitute boys, which, in a spot close by, has been in operation more than twelve months, and has been the means of rescuing from misery and ruin many boys who, but for this institution, would have been left to sink. They are now earning an honest livelihood, some as errand-boys, some in shops, while others have been sent to sea, where they are doing well, and bear a very good character.

In the sitting-room set apart for these boys is a fireplace fitted for cooking. Here sick people may have broth, puddings, and other things cooked for them free of charge. Something of this sort is greatly needed in all the poor districts of London, for many have very little idea of cooking properly; and in illness this is more than ever the case, to say nothing of the trouble and expense of cooking at home. Instruction could, at the same time, be given to some elder girls, who might assist in this kitchen. A trap-door and some descending steps lead where a large boiler has been provided for making soup in the winter time. Good soup is made and sold to the poor at 2d. per quart, cost price. This will supply a want that has been greatly felt in the parish: the prospect of a rise in the price of provisions during the winter will make this and other soup-kitchens of great value. Passing through the apartments of the superintendent, a room is found neatly papered, and hung with good prints. The floor is carpeted, and the place has the aspect of a drawing-room. This is the club-room, provided for working men, where they may smoke their pipes, have the opportunity of enjoying a gossip, or reading books, newspapers, and other periodicals, in a well warmed and well lighted apartment. Above this is a library.

Next is a club-room for women, which is provided in the same way as the men's club. Here, from six until ten o'clock in the evening, aged and other women may come to read, work, and talk. When we remember the conditions of some of the wretched homes which those persons are forced to occupy, the advantage of this provision is evident.

In the Working Men's club, we learn that already eighty subscribers have entered their names. The payment is 2d. a-week, and it is considered that this is more than sufficient to meet all the expenses of rent, light, fire, publications, &c. It is worthy of notice, that the club is under the management of the working men themselves, who will thus have a direct interest in its success.

One room is occupied by the Parochial Mission women, who are employed amongst the poor in performing various kind offices for them when in distress. There is also a clothing establishment in the same house, where persons living in the neighbourhood may procure articles at cost price. There is also a registry for servants out of place, nurses, and charwomen.

On the ground-floor a large apartment has been contrived, which is intended as an adult school for boys and young men, who are able to pay a small sum weekly for their schooling; and here it is proposed to give lectures and cheap concerts. Several inhabitants of the district have offered their services in carrying out this praiseworthy object. Here persons living in the neighbourhood will have the opportunity of spending an evening in a comfortable room—a greater boon to hard working men than many imagine, who are not aware of the conditions of their homes. In order that the most may be made of the premises, the upper part of two of the houses has been put into good order, and is let out at a reasonable rate to persons of a good character desirous of living in a quiet and respectable manner. We direct attention to this excellent work with pleasure, and recommend those who are willing to benefit the neglected masses of the metropolis and our large towns to pay the institution a visit.

The Swamps still abound; but the Bridges are building.

WE have made arrangements by means of which we hope to be able to place before our readers in the coming year articles of more than usual interest illustrative of architectural and social progress abroad. We shall, further, continue the review we have commenced of some of our large towns, with special reference to their deficiencies and requirements.

COMPETITION DESIGNS FOR THE LEEDS MECHANICS' INSTITUTION AND SCHOOL OF ART.

THE exhibition of competing designs for this institution commenced on Thursday, December 20, in one of the side galleries of the Music Hall, in Albion-street. This exhibition has been looked forward to with great interest by many persons. The union of a mechanics' institution, school of art, and picture gallery, boys' school and girls' school, and school of science; and the sum, 13,000*l.*, to be expended on the building which was to accommodate all these institutions, gave great scope to the architect's powers, and grand designs were expected from the competitors. This expectation was enhanced by the eulogiums which have been passed on the plans at every public meeting in Leeds for the past two months. Those who were interested in the cause of architectural beauty looked forward to a display of originality at least, and probably of some genius. It is true that the sum of money to be expended was small, and the ground to be covered large; but then the site of the building was grand; and it was certain that good men were working hard in this competition.

We have been accustomed to regard mechanics' institutions as standing illustrations of the utter sacrifice of feeling to apparent use; of beauty and elegance to commodious utility. This is necessarily the case in the management of these institutions; and unnecessarily, though almost invariably, evident in the architectural features of the buildings erected for, or adapted to, mechanics' institutions. But, in Leeds, the Town-hall has created a revolution. A building sufficiently good to please the Leeds people ten years ago will not pass muster now. The warehouses erected latterly, whose chief requirements are room and light, have added to these two necessities grandeur and architectural beauty. The Town-hall and the Wellington-street warehouses act as a standard by which all new buildings are tested; and great dissatisfaction is expressed when new works fall short of these common standards. Thus, the Overseer's Offices in East Parade, which are now being erected, are loudly and universally condemned by all men of taste and by the public generally. Yet we would remind the Leeds people that it is better by far than any municipal building or any private building erected more than ten years ago in Leeds. It is the standard which has been raised, and the public taste elevated; and the architect of the Overseer's Offices has not kept pace with this rapid improvement in both.

Being cognisant of these circumstances, it may be expected that no public body will venture to erect a bad public building in Leeds; particularly when the completion of the undertaking depends upon subscriptions from the inhabitants of the town. So that we were glad to hear the oft-repeated praises of the plans for the art schools, picture gallery, and mechanics' institution; and believed that, in proposing to erect a building which should be a credit to the town, the committee was doing the wisest thing possible, and making a powerful claim on the generosity of subscribers and friends of the institution.

Our first introduction to these plans on Thursday morning showed us that the committee has not been able to exercise much choice in the matter. There are only three plans out of the seventeen competing which could be adopted with any degree of credit. In two of these there are several obviously objectionable parts, and the third might be very considerably improved. But we shall notice the whole of the plans; and, after remarking upon each, give our own opinion on the plans generally, and the selected plan in particular.

The drawings are arranged in sets, but not numbered, and the names of the architects competing are not attached to them. It has been stated that three plans out of the whole were selected for ultimate comparison and choice, and that the authors of these three were Mr. Brodrick, Messrs. Perkins & Backhouse, and Mr. Shaw; all, oddly enough, Leeds architects. It is, moreover, no secret as to who are the authors of the majority of the designs; and, whilst examining the plans for this criticism, we invariably heard the spectators speak of the designs as Mr. So-and-so's, and not by the motto attached to them. We shall, however, only refer to the selected three under the names of the authors: the rest we shall notice by motto.*

* We should here remark that the principal conditions of the competition were,—1st. That the building should be so arranged that the school of art wing, the art gallery, and class-rooms for boys and girls might be erected first; leaving the Mechanics' Institution, library, hall, and reading-room to be erected afterwards. 2nd. That certain specified rooms, with dimensions given, should be kept in one block or wing; and that other rooms should be kept in the other block or wing to be erected afterwards.

"M.I.B.A."—The selected design of Mr. C. Brodrick, architect of the Town-hall, is on the plan of a rectangle, and is one of the few that are so treated. The site of the new building is not itself rectangular, one of the angles of the oblong being reduced, making a trapezoidal form.

The plan chosen has a façade to the three streets by which the site will be surrounded. It is in the Italian style. The entrance in the centre of the principal front is elaborately decorated. It is approached by several blocks of steps; and, on each side of the site, is a recumbent lion. The doorway itself contains elaborate carvings, both of mouldings, caryatides, &c.; and the two pilasters which break the façade and rise to the top of the building are surmounted by a segmental pediment, filled richly with sculpture. The general character of the elevation is that of a large unbroken rectangular block, relieved only by the before-mentioned pediment and the vase-like forms surmounting the pilasters on each side. A very noble tier of windows runs round the whole of the three fronts of the building on the ground floor, and gives abundance of light to the rooms in it. The whole of the first floor (the building consists of basement, ground, and first floors) is lighted from the roof, being appropriated to the school of art, picture gallery, and school of science. The lecture-hall is in the centre of the building, and is circular on the model (so the accompanying statement says) of the Rotunda at Dublin, and is 77 feet in diameter. The picture gallery and schools of art and science surround this great central hall on three sides; and, on the fourth (the back), the hall occupies the ground to the extent of the site. The ground floor is devoted to the reading-room, library, and offices on one side, and on the other to the girls' school. The basement is occupied on one side by the boys' school, dwelling-rooms for porter, and waiting-rooms, &c.; whilst beneath the hall is a large room of the same form as above, to be devoted to tea-parties.

So much for the internal arrangements, which appear, except in some slight particulars, all that could be desired. Let us now glance at the exterior. It has been noticed that the whole of the first-floor is lighted from the roof: there are, consequently, no windows above the ground-floor windows. Thus it will be seen that the whole of the top of the building, for one-third its entire height, is a dead wall, which, unbroken except by a cornice, gives a heavy leaden appearance to an otherwise grand and well-designed structure. The roof is low, and surmounted by a picturesque cresting, in some degree helping to relieve the weight of the dead-wall. We would suggest that a parapet should surmount the cornice instead of the present flat wall; and, instead of the flat space between the cornice and the ground-floor windows, the wall should be broken up at intervals by bas reliefs or other sculpture. A smooth stone building as this is would, in a few years, become blackened by the factory smoke, like the Philosophical Hall, in Park-row, Leeds; and then this third of the elevation, which is unbroken, will be like a huge leaden coffin, sepulchral, heavy, and excessively ugly.

"Prodesse civibus," the second selected design (by Messrs. Perkins & Backhouse), claims to be in the Tudor style, though there are not wanting features in it which are of any style but Tudor. This design has been described as being Classical on the ground-floor, and Gothic above; the windows on the ground-floor being circular-headed and plain, whilst the first-floor windows are bowed, with tracery. The top of the building is surmounted by a fifteenth-century parapet. At the angle of the principal front is a huge dome. The lecture-hall is 92 feet by 61 feet, of very good form, and will accommodate 2,087 persons. The picture-gallery is 84 feet by 30 feet, and a good room. The decoration of the hall, which is shown in a separate drawing, is most unsatisfactory.

"Spes" (now labelled as being by Messrs. Shaw & Sons), is the third plan selected out of the competition. It is Tudor in style, the principal feature being an octagonal lantern-tower,—not altogether destitute of character in itself, but wholly out of place here. The hall, or lecture theatre, is 116 feet by 50 feet, an absurd plan, considering the distance some of the audience must be from the lecturer. There are two galleries, one above the other in the hall, which have a bad effect. The general effect of the exterior is trifling and petty, and the windows are small.

"Fortiter et Fideliter" gives us an exterior like a reduced segment of the Coliseum, excessively classical, yet possessing considerable power. There can be no question but that the arrangements of this plan are infinitely superior to all the other plans in competition. It complies with the conditions most scrupulously. The lecture-hall is 90 feet by 70 feet: the picture-gallery is constructed on the South Kensington model: the accommodation for the class-rooms, both for the school of art and other classes, is admirable. The plan possesses one feature peculiar to itself: the great hall is in the angle of the plan, and stretches diagonally across the site, whilst on one side is a separate entrance to the school of art and picture-gallery; and on the other side a separate entrance to the day schools. No other competitor has coped with the difficulty of the site as the author of this plan has. It is undoubtedly the most masterly arrangement in the competition. The cost of the building is estimated at 13,000*l.*; the sum to be expended.

Red Cross in a Circle,—a device.—This is the most highly and elaborately wrought of the Gothic plans. In a series of nine powerfully executed drawings, the author gives us most detailed and minute plans, elevations, and perspective. The general character of the elevation is simple: the entrance is flanked by two towers with high-pitched roofs: the roof of the school of art is also high-pitched; that of the lecture-theatre semi-circular. The author makes the most of the dead wall of the picture-gallery, by constructional brickwork.

The internal arrangements of this plan seem very successful, and proceed from an intimate knowledge of the various departments, especially of the art department; which, judging from the accompanying statement, the author seems to have studied, and taken much pains about. The lecture-theatre, designed to seat 2,000 persons, is 107 feet by 64 feet, and is a noble Gothic hall. It is surrounded on three sides by a gallery. The plans include an elaborate system of warming by means of hot air, and of ventilation by a shaft in a central courtyard. The decoration of the hall is effective. We would suggest to the author of these plans that his design is considerably marred by heavy penwork in his perspective; though this seems a fault of haste, for the workmanship in all the others is masterly. And if the author will allow us, we will remind him that thirteenth-century costumes are not common in Leeds at present, and that his perspective is not improved by them. Also, that the spiral column of the human figure is a continuous joint at intervals of an inch and a half, or less, and not a vertical shaft, having a hinge in the middle like a pocket-knife. A memorandum of this sort will be valuable to all the other architects engaged in this competition, as well as to our Giottesque friend.

Red Cross in a Blue Circle,—a device.—The chief feature in the elevation is a very high-pitched roof and dome. We will not be responsible for describing the style of this design: the best characteristic of it is, that real brick is used. The arrangements, however, are not good. Great pains have been taken to make the most of the design, which has fourteen drawings to explain it, and is very creditably executed. The lecture-hall is 100 feet by 60 feet, and not a bad room.

Three Concentric Circles,—a device.—The internal arrangements of this plan are really good, but the exterior is so unfortunate that we shall not consider the design at any length. It is a stone building, and, in the upper story, has clustered shafts of green and red, the only colours in it, which look like small wax tapers borrowed from a Christmas tree. The author is evidently not at home in the style he adopts, which is a sort of Italian.

We will here deviate from our task, to protest against the use of monograms of a simple character. The last three designs have all concentric circles as a monogram, and two have internal crosses. This is confusing, and may be of disadvantage to a competitor. We also protest against long Latin sentences, as in the next design we notice, though we only give the commencement of it. Surely architects can find one word, or two at the most, of sufficient character to individualize their designs; and, if they only can avoid "Excelsior" and "Amicus," they are safe.

"Servetur ad imam," &c., &c., &c.—This Gothic plan is indicative of great practice in cottage architecture, which the author must have had; and *that* is not a good preparation for the designing of a large building. On the right is an immense hall with high-pitched roof, like a Belgian Hotel de Ville, without the dormers and gablets. On the left are clusters of gables, small, and dwarfed by the large hall. The arrangements in this plan are admirable. The details of the windows are exceedingly beautiful, and thoroughly well drawn. The hall is of a bad form. Few architects seem to take the trouble to make such perspectives as the author has executed.

"Sit Lux, et Lux Fuit."—Another Gothic plan, the principle characteristic being a picturesque tower of great elegance. The lecture-hall, 60 feet by 105 feet. The other internal arrangements are both good and commodious.

"Art and Science."—In seven drawings the author gives a detailed plan of arrangements, which (judging, as we have invariably done, from the printed instructions) are not of the best possible character, much space being lost in corridors and passages. The exterior is Italian, and heavy. The lecture-hall, 92 feet by 50 feet, is better in form than in the majority of plans, the prevailing error being to make the hall too long for its breadth.

"An Old Friend."—An Italian design. The author of this design, whom we suppose to be a Leeds man, proposes to devote 400*l.* of the architect's commission to the external carving, of which there is abundance. This, no doubt, is a delicate bait, but has been signally unsuccessful. The most original part of the plan is a large corner dome, the lower part of which acts as a vestibule to the lecture-theatre.

"Connoissance" submits six drawings of a red brick design, with a corner lantern-tower, not without character. The author laments the haste with which he has had to produce his drawings, and having to send them in incomplete. We notice this design for no other reason than to propose to the author that he should get some one to write his description of competitional works for him. There are not two lines of the description without four or five words wrongly spelt: the author dispenses with full stops, and is not very luxuriant of commas. The ridiculous verbiage, bad spelling, and absurd composition of this description disgrace the competitor. If "Connoissance" is a foreigner, we apologise for our remarks; but, if an Englishman, we are sorry for him.

"Ars et Scientia."—Elevation classical and meagre, not necessary accompaniments of each other. The lecture-hall has two galleries—a bad feature. The internal arrangements good and commodious. The picture-gallery is 80 feet by 30 feet, and built on the South Kensington model, which, by the way, seems to be the model for a large number of competitors.

"Ut Prosim."—Italian, with portico and central dome. A bad and minute edition of the Leeds Town-hall.

"Per Ardua."—A Gothic design. Totally insignificant; no unity or subordination of parts. Cottage architecture applied to a large building *must* be unsuccessful.

"Intent."—This is a design which seems to have cost the author little trouble. The elevation, in a pseudo-Italian style, is so unsatisfactory in point of design, that no excellence of arrangement could possibly compensate for it.

Having glanced at all the designs, we must now say a few words concerning the competition itself. There are eleven Classical and five Gothic designs, three only of which seem to us worthy of consideration. These are—"Fortiter et Fideliter," Red Cross in a Circle, and Mr. Brodrick's. We have carefully compared all the plans, room with room, judging in all cases by the printed instructions. Concerning the two first: both are so good that it seems to us merely the question of Classic or Gothic as to which should be selected. Both not only comply with all conditions, but show, in provisionary rooms not asked for, a very close knowledge of the subject. All the rooms are well lighted: the arrangements are simple and distinct: no space is lost in either; the central courtyard, in the Gothic design, being most valuable as a means of access for carts and goods. Both of these designs can be built in two parts—the art department first, and the hall of the Mechanics' Institution afterwards. Both can be built for the money (13,000*l.*) as the designs now stand.

Concerning Mr. Brodrick's design, we have only to say that, if it suits the committee of the Mechanics' Institution, the committee has entirely misled all the other competitors by the issue of the printed conditions. Mr. Brodrick is the only competitor who has systematically neglected compliance with the principal conditions, and his design has been chosen. We must explain. Condition No. 2 says:—"The plans to be so arranged that, if necessary, the school of art wing, including the art gallery and the class-rooms, &c., may be erected first, leaving the Mechanics' Institution, library, and reading-room, &c., to be erected afterwards." Mr. Bro-

drick has placed part of the school of art over the library and reading-room, and a tea-room, which was to be on the basement of the school of art, he has placed under the central hall; so that with his plan it is impossible the two sections can be built separately. Condition No. 5 says:—"The total cost of the building is not to exceed 13,000*l.*," &c. The selected plan exceeds that sum, without the lions at the entrance, the pediment over the doorway, or the caryatides. In the table of dimensions given in the instructions, the number required to be accommodated in the lecture-hall is 2,000. Mr. Brodrick states in his description that his hall will only seat 1,600; and, if more space be required, the audience must look through the glass screens or doorways at the back of the hall, standing; or a gallery be erected on the external landing for each lecture requiring sitting room for 2,000.

Now, we do not wish to pass a judgment on the committee of selection, which committee, we suppose, includes the men of taste who are subscribers to the institution; but we will quote to them the 12th condition issued by themselves: "As the only object of these conditions is to secure proper and strict impartiality in the selection, so that the best design may be adopted without improper influence or prejudice, it is hoped that they will be strictly complied with: *any breach of them will certainly exclude the drawings.*"

A short time before the drawings were sent in, a circular was sent to the competitors to say that in case of any difficulty of providing for the school of art rooms, some of them might be placed in the Mechanics' Institution wing. This, of course, entirely altered all the previous conditions; but it was sent too late to be of use to the majority of the competitors, who have not been able to alter and improve their plans by the arrangement. Thus we find that in the best plans the original instructions are observed strictly: curiously, however, the permission was used in the selected plan.

We will ask this question in the name of those gentlemen who have adhered to the original conditions. Did the committee authorise the issue of the second circular reversing the first, and was it issued on the representation of the majority of the competitors, or by the request of the author of the selected plan? It is due to those who have spent much valuable time in this competition that good faith should be observed towards them. It is right and just that others besides local men should have a fair chance. Competitional morality on the part of committees is not high. We should be glad to hear a satisfactory explanation of this instance of competitional injustice. We do not know personally one of the competitors. But we, in common with other professional organs, have a direct interest in the maintenance of strict integrity in public competitions.

It was stated in one of the local papers that the three selected plans were referred to Mr. Scott, for his opinion. We should be glad to know if the three were submitted to that gentleman, and whether he was aware of the existence of the printed conditions, which the committee had issued.

Our object in this inquiry is to give the unsuccessful competitors an opportunity of gaining fresh confidence in the fairness of competitors; for some of them seem to have that confidence shaken; and, we confess, not entirely without grounds.

ON ACOUSTICS.*

THE next unfavourable agency named was that of obstacles. Sometimes in buildings of some size obstacles in the shape of columns, not only may be tolerated, but will bring beneficial results after them on account of the good they do in breaking up or cutting off vacant spaces. This is particularly the case with the columns in churches, which, obstacles though they may be to direct sight and hearing, often help to prevent reverberation, and always are essential to that system of construction with a nave and side aisles, which is not only ennobled by ancient tradition, but also found to suit well with modern requirements.

The most serious obstacle to comfort in hearing is the interference of some one's head between the auditor and the speaker. Where the speaker is not very high up indeed, and the audience occupy a level floor of any great extent, the inconvenience from this cause is much felt, and some partial elevation of the back of such a floor is often attempted.

A method of securing an undisturbed ray of sound and line of sight for each auditor was first published by Mr. Scott Russell in the "Edinburgh New Philosophic Journal," vol. xxvii., for 1839, and has since been re-described and illustrated by Lachez, though it appears to have been practised more or less perfectly by the Romans. It consists in a system for setting out the height of the seats, by which they fall into a curve, called by Mr. Scott Russell the is-acoustic, or equal-hearing curve. The mode of procedure is as follows:—Having a section of the room, and having determined the position of the speaker and the seats, you proceed to determine the height at which you will place the speaker above the first auditor. This settled, draw a line from the speaker's mouth, and let it touch the point where the top of the head of the first auditor ought to be. This will fall on the line marking the position of the second auditor, and you fix the height for his seat, so that this visual line will come below his eye or ear—for this allowing some average dimension. From the point thus obtained, set up a height which will give the top of the head of this second auditor, and so on.

The dimensions that Lachez advises to be followed are:—

	m.	m.		ft.	in.	ft.	in.
Back to back of seats	0.60	to 0·75	i.e.	1	11½	to 2	5½
Height of seat	0·45		i.e.	1	5½		
Mean height from top of seat to eye.....	0·75		i.e.	2	5½		
Mean height from eye to top of head not less than.....	0·15		5⅝ in.	0	6		
Better as much as ..	0·30			0	12		

Mr. Scott Russell recommends for face-room, or the height from the mark for the supposed position of the eye to the top of the head, an allowance of 18 inches.

The nearer to the front seat the object to be seen or person to be heard is placed, and the lower it is, the more steep will be the inclination of the seats.

The farther removed and the higher elevated the object is, the less steep will be the curve which, in such cases, even dips down at the commencement of its course.

The seats in the Handel orchestra at the Crystal Palace will give a good idea of the nature of this is-acoustic curve.

There is a great advantage besides the direct radiation of sound to auditors thus placed, and it is, that they are almost of necessity free from the effects of echo. To make a stepped arrangement of seats perfect, they should be arranged on a sweep on plan, and then every auditor will have his face directed towards the speaker—will have an uninterrupted sight and hearing, and will be free from echo at his back; for if any such echo exists, it *must* pass over the heads of every one but those in the very back row of all.

The remaining obstacle is unshapeliness and bad proportion.

That a disproportionate room is bad for sound is a fact long since admitted, and holds good whether that room be large or small; but when this has been said, and experience has been appealed to for confirmation of the fact, there is very little that, in the present imperfect state of architectural acoustics, can be added. The subject has been alluded to before, and the most probable explanation of what is an admitted truth was then given, namely—that if all the dimensions are not in proportion to one another, the note of the room will not be good and pure. It is very possible that, in time, we shall know this for certain, and shall know, too, what precise series of numbers are best for dimensions, so that a room may be "voiced" beforehand, like a bell or an organ-pipe, by calculation. But we have not reached such knowledge yet.

In connection with proportion, however, I ought to draw your attention to the great division which seems to obtain between buildings for sound. There are, no doubt, two main divisions of speaking places, in the one (of which an ancient theatre is a type), sound is directly radiated from the speaker to the hearer much as in the open air. These should approach a circular or semi-circular shape, and an equal dimension in every way.

The second sort are those where the form of the building combines with the initial direction of the sound, or imparts such a direction to it, and conducts it onwards in one direction. The majority of large rooms are of this class.

Probably, therefore, one or other set of forms and proportions must prevail. If the building is to be on the radiating principle, it must be constructed so as to avoid reflection of sounds, and may be lofty, but must approach a semicircle or a circle on plan.

If conduction is to assist, then there must be one dimension decidedly predominating over the others, and that dimension should be the length away from the speaker, and should regulate the width and height; with the proviso, that in these buildings the proportions should be rather long than short, and rather low than high.

With one example of an influence upon sound in galleries and long rooms, which is unquestionably due to the proportions of the room, and will be modified by every modification of those proportions, we shall have done with the topic.

It must have often occurred to persons listening to music in a tolerably long hall or gallery, to notice that there are portions where the sound appears more distinct than in others. This was very noticeable in the Floral Hall at the time concerts were given there, and may, I understand, be detected in St. James's Hall.

This phenomenon coincides with an interesting investigation of Savart, published by him in the *Annales de Chimie*. He invented an apparatus for showing visibly the actual condition of the air in a room during the time that a continuous sound of great intensity was kept up; and I mention this investigation, not as having been pushed so far by him as to lead to any practical result, but rather as showing that methods exist by which we may perhaps be able to arrive at information as to the acoustic condition of the air in rooms to a degree hitherto unattempted.

The sound employed in this investigation was that of a bell fixed in front of an open cylinder of such dimensions as to be suitable to reinforce powerfully the note of the bell; and a sound was obtained by this apparatus of such intensity as to be hardly bearable. The effects of this sound on the air were made visible by a sort of artificial ear, formed of a thin membrane stretched tightly over a small wooden frame, and lightly sprinkled with sand.

This membrane, when near the bell, became excited, so that the sand on its surface was thrown into an agitation, but on moving it to and fro along the room, places were found where the agitation varied: in some parts it became very intense, in others very moderate, and on exploring every part of the room, it was established that the points of greatest intensity formed a spiral line, making several revolutions during the length of the apartment. On opening an end-window, this spiral could be traced as continued into the air beyond for a considerable distance. The distance from one turn of this spiral to another was not equal to the length of the undulation proper to the note sounded; it became greater the larger the apartment, and in a long gallery approached the length of the sound-wave.

When the windows in a chamber were opened, the position of this line of loudest sound, which, by-the-bye, was distinctly perceptible to the ear, as well as visibly demonstrated by the moving sand, was altered, but moving about the sounding apparatus from one part of the apartment to another did not cause any such alteration, which seems to show that this property of a room, if once decidedly manifested, cannot be altered by moving the position of the speaker, but will only be affected by changes in the room itself.

We have now got together some few materials for the design of an acoustic building. Let us for a little consider how they have been applied, or can be applied to various descriptions of structure, commencing with an inquiry how far the simple consideration of size ought to modify the treatment.

The safe limit of direct radiation can, of course, only be very approximately ascertained, but comparing the results obtained by Saunders's experiments, with the observations of that accomplished philosopher as well as architect, Sir Christopher Wren, we may say approximately, that if we were to enclose a space not exceeding 70 feet in length by a somewhat smaller breadth, we should be quite safe in presuming that the natural radiation of a human voice of ordinary power would reach all the audience with no assistance, when the speaker was placed in the best position for being well heard, provided always we were able to insure that no echo from any part of the walls should interrupt. Should our building be much larger than this size it will become desirable to assist, if practicable, the voice of the speaker. If we apprehend a considerable interference of any obstacle with the sound, this may be too great a dimension to be safe. If, on the other hand, circumstances are all favourable, it may, perhaps, be exceeded.

The conditions under which a single speaker can best address an auditory depending upon direct radiation, have been already referred to. The building should have a circular outline, and be in extent something more than a semicircle. The

* By Mr. T. Roger Smith. See page 815, *ante*.

seats should rise one above another, and the speaker should be pretty well forward among his auditors; and the remotest auditor should not be beyond the limits of direct radiation.

The most perfect type of these buildings, seems to have been an ancient Greek theatre; especially if we bear in mind that the chorus which occupied the most forward part of the stage, was the most prominent feature in the earlier Greek plays. In modern buildings this form has, unhappily, gone out of fashion, except for scientific lecture theatres; but there is one fine example in the great Handel orchestra at the Crystal Palace, the appearance of which, when full, will convey some idea of what the auditorium of an ancient Greek or Roman theatre must have been when crowded with people. Roman theatres differed from the Greek ones in the auditorium not exceeding a semicircle in extent, and in being constructed even down to a late period, and, when of large size, of wood, the resonance of which material was, as Vitruvius tells us, relied upon to reinforce the sound, consequently the *echeia*, or brazen reinforcing jars introduced into Greek theatres, were not adopted in Rome.

There has been much controversy about these *echeia*, and those who wish to know about them, will do well to consult the "Dictionary of the Architectural Publication Society." It may be sufficient to observe that, though in all probability the resonance from them would not have flexibility enough to reinforce speaking, it would be admirably suited to strengthen the effect of slow-sustained declamation, especially if that declamation were of the character of a musical recitative or chant; and if, as seems probable, the principal parts of a Greek drama partook of this character, we cannot doubt that the vases would be a real assistance.

Among English lecture theatres that of the Royal Institution has always been deemed famous. It resembles Roman theatres in being constructed of wood; its seats are arranged in a curve similar to the is-acoustic curve, and its dimensions are very nearly indeed in the relation to one another of 2, 3, and 4. Its outline presents a semicircle of 30 feet radius, with the ends prolonged 15 feet, and the ceiling is flat, the wall behind the speaker being flat also. One great advantage in this building is the comparatively small volume of air it contains: the favourable form and proportions help it; but it no doubt draws much of its excellence from the resources of the wood employed in its construction.

Lachéz in his pamphlet gives views of all the principal lecture theatres in Paris, and points out that most of them are defective through having too vast a space above and behind the speaker; and he shows that if we wish greatly to extend the space of such an auditory, the walls should radiate behind the speaker's head, and the ceiling should also be lower where he is than elsewhere.

All modern theatres for dramatic performances depend mainly, though not exclusively, upon direct radiation. In one of the most celebrated and most frequently quoted examples, however,—that at Parma,—the form was such as to favour conduction as well as radiation, while the resonance of the material, constructed as it was internally of nothing but boards, even to the ceiling, no doubt, helped the sound very much. The Parma theatre is connected with the ducal palace, was built in 1618, and so far back as 1790 was in a state of decay. It must not be confounded with the modern Teatro Ducale at the same city.

The dimensions of this building were considerable; its length from the front of the stage to the back of the gallery above the stage is 130 feet, and the width 102 feet, the general form being an oblong rounded off opposite the stage, and the seats being ranged amphitheatrewise in steps. Notwithstanding the great size of this house, a low voice could be heard in every part, even if the speaker was as much as 10 feet back, making the distance from speaker to hearer 140 feet.

Of more modern theatres, perhaps, not one is so famous for acoustic effect as the Opera-house in the Haymarket, which was brought to its present form internally about 1790. Here again we have considerable dimensions, though not at all equal to those at Parma; but we have the entire interior constructed of wood, the ceiling of wood, and the stage brought so far forward that a singer may be almost in the middle of the auditory, and may be heard by all of them directly. The orchestra of course, is even more among the auditors; the stage is extremely shallow behind the curtain; and the auditory is a little more than a semicircle prolonged by two almost straight sides, which approach each other as they reach the proscenium. The ceiling is an extremely flat curve over the pit, brought down above the stage to throw the voice forward, and there is a hollow unoccupied space above it. Altogether the form is undoubtedly favourable to sound in a high degree: the space above, behind, and at the sides of the singer is restricted as much as possible, and gradually swells out in the part where the sound is wanted to expand, while the divisions of the boxes which do not radiate from the stage would prevent any echo from the back wall, and break up any wave of conducted sound. More important, however, than the form, in all probability, is the use of resonant material and resonant cavities, and the entire absence of plastered surfaces.

There is one other group of public buildings which peculiarly require to be treated on the amphitheatrical plan, but which hitherto have always exhibited a sort of unsuccessful compromise in their arrangement. I allude to courts of justice.

It is very desirable that the general public should hear well, and they have therefore usually been ranged on steeply-inclined benches; but this has ordinarily been done in a square and often a cubical room, so that all the disadvantages of the square corners and of undue height above the very persons to whom perfect hearing is essential, are retained. In most old law courts various contrivances for contracting the space above the bench are visible; but it would be a much better construction if the court were from the commencement arranged so that there would be a fair prospect that those who *must* hear would hear *perfectly*, and that all others present would hear well.

The moderate size of our law courts points to the principle of direct radiation of sound, as the one on which they must be constructed. The basilica, on the other hand, the form anciently employed for the same purpose, introduces us to the consideration of the second great division of buildings, namely, those where the transmission of sound is *assisted*, and whose peculiarity is that they are *oblong*. These divide themselves naturally into buildings with a nave and aisles, and simple large or small rooms.

It will be perhaps desirable to consider first those buildings with nave and aisles of which the basilica may serve as a type, and afterwards to notice large rooms ceiled in one span, and small rooms.

In the large cathedral churches of Mediæval times,—where the object was not simply to build a church just as large as a single speaker might fill with his voice, but to raise a monumental pile for ceremonials,—it was of no moment that the resonance of the air contained in the building should be great, so long as it did not destroy the effect of music; and these buildings afford accordingly a wonderful illustration of the sonority of a large body of air, but very few of them are easy to fill with a distinct spoken utterance.

In Protestant churches of more moderate dimensions, the main object undoubtedly is, that read and spoken words, delivered from the reading-desk, the pulpit, or the altar, shall be perfectly audible to the congregation. How far does the ordinary arrangement of nave and aisles effect this?

There is no question that the columns inseparable from such an arrangement interfere with direct sight, and partly with direct hearing; but I believe it will be generally admitted that the advantages attending upon their use more than counterbalance this disadvantage. I have stumbled upon a passage on this subject in Mr. Denison's lectures on church building, in which I think you will be able for once to concur with that gentleman.

"It is at last discovered," says he, "that so far from the pillars and aisles and broken roofs of Gothic churches, built after the fashion of the old ones, being worse for hearing in, they are generally better than the wide-spread buildings all under one span, like a railway station, which it was the fashion to erect in large towns a few years ago. This fact is noticed in two recent reports of the Church-Building Society; and I had observed the same thing myself in several instances, even in small churches, though without knowing that it was general before I read it there. Certainly some of the worst places for hearing in that I know are buildings all under one roof, and of far less capacity than many churches, both old and new, of the nave and aisle construction, in which a large congregation can hear perfectly well; so that in this, as in many other things, the old Gothic builders knew what they were about a great deal better than we do."

The system of open roofs, of a high pitch, so as to accord somewhat with Gothic character, and carried from wall to wall in a single span, was some years ago employed a good deal for Dissenting chapels; and many instances have occurred where these places are bad for hearing, in some instances to a serious extent. The English Chapel Building Society, is now employing its efforts to promote the erection of buildings divided into a nave and aisles, even where the size of the place of worship is but small.

The position of the pulpit in churches and chapels, with nave and aisles, is a point of considerable importance. In chapels for Dissenters, it is usually placed in the centre of the end of the building, with the communion-table in front of it.

In churches it is almost necessarily placed at the side, principally that it may not intercept sight of the chancel and hearing of the Communion service. There is, however, another quite as good reason for this position, which is, that a centre aisle is almost essential to the decent arrangement of a church; and it is in the highest degree unpleasant to a speaker to have the empty bareness of the aisle in front of him whenever he lifts his eyes, while it is equally unsatisfactory to the congregation to see their minister as nothing better than a dusky shadow, projected on the light of the east window before which he necessarily is fixed, if his pulpit be central.

Is this position acoustically bad for the pulpit? and (whether at the centre or the sides) should the pulpit be far forward or not?

In answer to these inquiries, it seems clear that if the building be thoroughly good to speak in, it will not be so very material where the pulpit stands; but I have no doubt that in doubtful or bad cases, especially where there is echo, the side position of the pulpit is much more likely to prove advantageous than the central one; and on that ground is to be recommended, even for Dissenting places of worship, for the voice being naturally directed towards the main mass of the congregation, will be sent, not straight against the end wall, but obliquely against a side wall.

It is, I believe, always bad to place a pulpit directly against a wall. The practice of Sir Christopher Wren, followed by many good architects, is to put it forward some distance into the nave. Others withdraw it into the chancel, or under the chancel arch.

The choice between these two positions must depend rather upon the shape of the church,—if it be nearly square, so that the hearers can be grouped round the preacher on the direct radiation principle, I would put the pulpit forwards among them, and place it against a column, as is done in the great Continental churches. If the church be long, and the hearers must be reached rather on the speaking-trumpet or conduction principle, the pulpit will probably answer best drawn back under the chancel arch. If there are transepts, and a difficulty is found in making people in the nave hear (and this often happens with transepts) it will be quite worth while to try drawing the pulpit a little back into the chancel—for it generally happens in these cases that the communion service, read from the altar, is better heard down the nave than either the prayers or the sermon, owing to the direction the parallel walls of the chancel impress on the sound.

Wren's churches, it seems to me, may be studied as models of arrangement for church-building in large towns; the more so, because, while classic in style they follow the forms of Gothic churches in plan and section. It is remarkable that, notwithstanding that his unrivalled constructive skill gave him every inducement to erect a wide roof, he has not, so far as I know, left a single church without columns in the interior, except only the very smallest. In almost all cases he has placed the pulpit some way down the nave, and in all, the proportions of the cross section, while they avoid the vice of being cramped, present a certain general impression of lowness when seen on a drawing.

It seems agreed that, except in excess, the timber trusses of open timber roofs are advantageous on account of breaking up echoing surfaces; but I fancy that, so far as it goes, the sharp angle the two sides of such a roof make at the ridge forms a noisy sort of trench, and that a better effect is obtained where a wooden ceiling is thrown across at the level of the collar or higher. This will partly depend on the proportion of the church.

Galleries are, if properly inclined, not bad places to hear in; but the spaces under them are, unless the galleries are shallow. This especially applies to side-galleries; an end gallery may safely be deeper. Such a gallery sometimes helps to prevent an echo, or the introduction of one will often check an existing echo.

On church building, finally, we have among old

authorities, not only the practice of Sir Christopher Wren, but his recorded opinions, embodied in a letter, from which, had time permitted, I would have made an extract. The document in question is to be found in "The Parentalia," and expresses Wren's conviction that 2,000 was about the extreme numbers that could be accommodated in one church, which he prescribes ought not to exceed 90 feet long by 60 broad. He observes further—"A moderate voice may be heard 50 feet distant before the preacher, 30 feet on each side, and 20 feet behind; and not this unless the pronunciation be distinct and equal." And from this starting point he seems to have regulated his practice.

As to modern practice, the members of this Institute ought to be able to furnish full information on church building, considering the great activity that has lately prevailed in that branch of practice.

The last topic on which I have to trouble you relates to buildings without any columns internally—in fact, large rooms. The most difficult subjects for the architect to treat would seem to be rectangular rooms—perhaps those of moderate size being worse to encounter than larger or smaller ones. Among these I would include great and small halls, lecture-rooms, and concert-rooms, and also the majority of Dissenting chapels, together with such churches as are not built with a nave and aisles.

A rectangular room of considerable size is the commonest form for apartments destined for great assemblies, and is so simple, and has become so natural, that it will probably never cease to be usual for northern nations; and yet it lies open to nearly all the obstacles which we have described as besetting buildings of one or another class. Its flat floor renders it liable to the obstruction of the direct lines of hearing; its straight ends almost preclude any arrangement of auditors on a semi-circular or segmental curve; its flat sides and square angles are very apt to reverberate; its flat ends, coupled with its considerable dimensions, expose it to echo; the mass of air in its height and at the back wall tends to swallow the speaker's voice; and even its very dimensions allow space for the voice to decay, while it is very possible that its windows or its skylights may afford opportunities for sound to be generated of a disturbing character.

I am not prepared to bring forward a single instance that unites all these disadvantages, though Exeter Hall, before the alterations, might have been instanced as exhibiting a good many of them.

I am, however, better pleased to invite your attention to one or two cases where these obstacles have been all successfully surmounted, and from the consideration of these we shall be able to form some tolerably definite ideas of what a great hall ought to be.

We will first consider the case of the Free Trade Hall at Manchester, the work of Mr. Walters, who has most obligingly furnished full information respecting it. The requirements here, as in most great rooms, embraced fitness for both musical entertainments and public speaking, with accommodation for a very large audience, and good architectural effect. All this has been successfully accomplished.

The dimensions of this hall are very considerable; they are, as measured from the contract plans:—The internal width, 104 feet; length, 176 feet; height, 70 feet; thus bearing very nearly the simple arithmetical relations to one another of 2, 3, and 5. The plan is a parallelogram, with a semicircular sweep at the end opposite the orchestra. The orchestra is partly in a recess with a roof curved upwards, but advances into the body of the hall. The side walls are low, the ceiling coming down on to them with a cove of unusual height.

The side walls are plain below the gallery, the upper part of them being broken only by engaged pilasters, so that they offer no obstacle to conduction, and what reflecting power they exercise will be favourable; but at the remote end, where conduction along the walls would commence, and at the semicircular end, the surface is broken up so as to dissipate or destroy the conducted wave of sound. Columns here take the place of pilasters. Deep, open recesses, used as private boxes, are formed, and balconies are thrown out on corbels; while the gallery, which at the sides is shallow, becomes here deeper, so as more effectually to check the sound that might reach the back wall, and be echoed. The doors of entrance are here, too, covered with cloth; and lastly, the front of the gallery itself has a section of compound curvature, so that it cannot echo. These precautions, coupled with the curved end of the room, are successful, and there is no echo.

When full, this hall is very successful, either for music or for speaking; but when empty, the resonance on it amounts to reverberation.

The good result, here, it will be remarked, is mainly due to form and proportions; resonant material is not present in an extraordinary quantity, for the walls are plastered, and so is the ceiling; the floor, however, has a space underneath it, and there is a large space above the ceiling. I believe there is a good deal of woodwork about the orchestra—the most important part,—and there is a large organ there which, I cannot help believing is likely, even when not played upon, to be a slight auxiliary to sound.

Another example of great fame in the north of England is the Philharmonic Hall, in Liverpool. I have hastily visited it, but am not in a position to speak of its good qualities from personal experience, or to lay before you any authorized information, except what appeared in the *Builder* at the time the Hall was erected. The architect is Mr. Cunningham; and the dimensions given in the *Builder* are,—extreme length, 135 feet; extreme width, 102 feet; extreme height, 68 feet; open part of hall, clear of boxes, is 106 feet by 68 feet. Calculated accommodation, 2,300 persons.

The appearance of the Hall on entering is most peculiar: two elliptic arches of vast span extend along the two sides, while smaller ones cross the end; and by these the very considerable dimensions of the Hall between the walls are masked, and it is brought to appear a moderate-sized apartment with a domed ceiling, and having four recesses opening out of it. These recesses are occupied—one of them by the orchestra, and the other three by two galleries, one above the other, and receding back.

The orchestra is the only place where resonant material appears to have been employed. It is built of wood, and contains hollow cavities of considerable size. In all other parts the architect seems to have dreaded resonance as much as echo. The surfaces likely to echo are curtained over and divided with great care; the boxes into which the galleries are divided are hung with draperies, and on nights of concerts the floor is covered with a carpet, and all the seats are cushioned.

I have been given to understand that the effect upon music is, that it is heard most distinctly, and quite free from reverberation or echo, but that the room affords *no* support or assistance to the voice or instruments.

It is perhaps not right to conclude a reference to this building without observing that, in arrangements for ingress and egress for the comfort of its occupants, and so far as one could judge, for ventilation, it is one of the best and most liberally planned structures we have.

Coming nearer home, we may refer to the very large and very successful music hall in the Surrey Gardens, for authentic information respecting which I am indebted to the arcbitect, Mr. Horace Jones.

In this large building as many as 13,000 persons have been assembled to hear music and to hear preaching, and in either case have they done so without difficulty. The general form of this building is well known. It is an elongated octagon, or a parallelogram with octagonal ends, and into which the walls of four octagonal staircases project. At the end opposite the orchestra, and up the two long sides, are built three tiers of galleries, with fronts of curved section, and supported on iron columns. The roof over two of these galleries is horizontal; that over the third one inclined; and that over the central space is very similar to the one at Liverpool, both being domed rather like the bottom of a ship.

The dimensions of this hall are very considerable. The extreme height and extreme width are within a foot the same; the width is 68 feet 6 inches; the height 69 feet 6 inches; the length is 153 feet 6 inches, or two and a quarter times the width,—another instance of simple proportions. The form is well chosen, and the galleries act extremely well to prevent echo and reverberation; while yet they are not so near together but that they can be well reached in every part by the voice. The principal reliance of the architect for musical beauty of tone was, however, placed upon the use of resonant materials. The walls are lined with match-boarding on battens, and it was at one time intended to form the ceiling also of wood. The orchestra is constructed of thin, well-seasoned planks, and there is a sounding-board over it in a slightly inclined position, the action of which is believed to be very beneficial. This is not only of wood, but it was specially required to be of *old* materials. That these various precautions have been successful is a matter of notoriety; and, in fact, they have answered so well that this hall has been pointed out to me by a professional musician as one of the best in London, not only relatively to its vast size, but absolutely.

Very many other rooms might be brought forward and analyzed, even of those in London alone. To refer to only two others, we will take the ball-room at Buckingham Palace and St. Martin's Hall. The ball-room was built by Mr. Pennethorne. The dimensions are 110 feet by 60 feet, by 45 feet, bearing to one another very nearly the relations of 3, 4, and 8. The angles of the room are rounded, the ceiling slightly roughened with ornament, and brought on to the walls by a cove. The cornice has very little projection, and the lower part of the building is lined with boarding, covered with silk. There is a recess at the end, apposite the place for the music, broken up with pilasters, &c., so as to dissipate echo. This room is admirable for music.

St. Martin's Hall was mainly designed, so far as its adaptation for acoustic purpose goes, by Mr. Hullah himself. It measured, according to the account published at the time it was opened, 121 feet 6 inches long, by 55 feet 5 inches wide, and was 40 feet high. The dimensions cannot be exactly reduced to any very simple relation, though they are not very far from 2, 3, and 6. The nearest to them are 5, 7, and 15. The height and length, however, are very exactly proportionate, the height being one-third the length. This room had no recess for orchestra or organ, but the orchestra, probably the most perfect one in London, was built up of wood against one wall. There was a gallery rather deep across the end, and shallow at the sides, with the front carefully reduced to the minimum of surface. Facing the orchestra was a recess, partly breaking up the end wall. The windows were all high up, and were slightly recessed.

The distinguishing feature of this room was its great wooden ceiling, flat in the centre (which occupied about half the entire width), and sloped down at the two sides to meet the walls. This was paneled, and there was a hollow space over it, and under the floor.

The room, when full, answered to perfection for music, but it was, when partly filled, subject to reverberation, owing, no doubt, to its extreme resonance.

Among the smaller public rooms there are a great number of examples of a class for the acoustic construction of which I would earnestly bespeak more care than has ordinarily been bestowed upon them. I refer to the small public rooms in suburban villages or country towns, the failure of which is as great a calamity for the community to which they belong as the non-success of the most important structures would be in great cities.

These rooms are perhaps more frequently than not imperfect, and consequently fail of their end, which is to afford the inhabitants of the place where they are built a good meeting-place on public occasions. Ordinarily, I think, the small means disposable lead to the walls being built bare and unbroken, but plastered. The ceiling is often too high for the other dimensions of the room, and if there is any semblance of an open roof, it is so thin and slight as to offer little or no obstacle to reverberation. Very frequently, too, circumstances render it advantageous to light these places from the roof, and skylights that act as sound-traps are formed, or if not, at least the walls are left quite devoid of any breaks. It would be desirable in building such a room to pay regard to good proportion, and where practicable, to light from side windows. If this is not admissible, probably it will be advisable to break the line of the walls by piers and arches of moderate projection; and above all, to form some description of break or recess, or cant or curve, in one or both of the end walls, and to make the ceiling drop down at the ends. It would be wise partially to line the walls with wood, or form a wooden ceiling, and if it is necessary to keep the surfaces plain, not to plaster them internally, also to curve or cant off the angles on plan, and to cove or cant the ceiling in sections.

In existing rooms that are bad the best remedy must be usually left to the judgment of the architect, as the circumstances of the case will vary; but the most generally useful and the most inexpensive palliative for reverberation,—the usual vice of these small halls,—is to hang up curtains in various parts. Matting or carpet on the floor might

often be of use, and a sounding-board, or even a sheet of canvas, so stretched as to cut off part of the air above and behind the speaker, might often be advantageous.

The subject is now before you, gentlemen. We have considered the general laws of sound, and the modes of influencing sound in a building, namely reflection, as in a sounding-board, referring especially to the parabolic sounding-board; conduction, as in the speaking-trumpet; and reinforcement by resonance, as in the violin. The subject of impediments next required attention, and we have considered echo, reverberation, obstacles with the is-acoustic curve as a means of escaping them, and bad proportion.

Lastly, we have referred to the application of these general principles to particular cases, dividing them, according to size and shape, into buildings for direct radiation of sound, or square and round buildings, and buildings for conduction of sound, or oblong buildings. Among the former we have noticed theatres ancient and modern, lecture theatres, and courts of justice; among the latter, basilicas and other buildings with nave and aisles, and large rooms.

AMERICA.

On the 28th ult., the back wall of a large building in Whitehall-street, New York, erected last year, and used as a storehouse, gave way. The roof bent by its own weight to the floor. According to the American *Architect and Mechanics' Journal*, the building belongs to Mr. J. T. Johnson, for whose arrest a warrant has been issued, under the Unsafe Buildings Act. The damage is estimated at 75,000 dollars.

At Lewiston, Maine, a new cotton-mill has been completed, 542 feet long, 74 feet wide, and 75 feet in height. A continuation of the building, one story high, makes the total length 609 feet. The buildings occupy more than five acres of ground, and have swallowed up nearly five millions of bricks. A bell has been hung in one of the towers, 6 feet 7 inches across the mouth, and 5 feet 1 inch in height. The buildings will cost 200,000 dollars; the machinery, 500,000 dollars.

Dover-street, Boston, is being raised: whole blocks of houses have been lifted from their original foundations to the required level. In some of them the occupants have pursued their daily life indoors without interruption! One block has been moved back 8 feet.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held on Friday, the 22nd inst., at the House in Conduit Street.

The chair was occupied by Mr. Blashill.

Messrs. Clarkson and Crawley were, on ballot, elected members of the Association.

After the transaction of some routine business, Mr. Blomfield, Vice-President, read a paper "On the Arrangement of Old Churches," to which we shall return.

At the conclusion,

The Chairman observed, that an important and interesting point, referred to in Mr. Blomfield's paper, was that which related to the introduction of a new material in construction, in the shape of cast-iron. Iron and glass were, in fact, the distinguishing features in buildings of modern times. He remembered that he had spent a pleasant hour with Professor Cockerell, in looking over the designs for the church at Constantinople, and that they noticed a general omission of iron and glass. The new reading-room at the British Museum was not, however, open to that objection, as iron and glass had been abundantly introduced, The difficulty of the arrangement of columns was serious, especially when the area of the church was large. This, however, might be got rid of by making the nave large and the aisles small. With regard to the pulpit and reading-desk, he feared that if wood were the material used in their construction, there would be a difficulty in making them fixed and permanent.

Mr. Bunker reminded the meeting, in justice to the gentlemen who had competed for the church at Constantinople, that they were told that earthquakes were not unfrequent in that part of the world. It was therefore thought that a solid pier of 2½ feet was more likely to bear a superincumbent weight than a pillar of ten inches in diameter. With regard to reading-desk and pulpit, it was very important that they should be made structural features, but it generally happened that when the Specifications came out higher than was expected, the pulpit and reading-desk suffered. This was what often led to insignificant-looking pulpits, more like washing-tubs than anything else.

Mr. Blomfield said he had not multiplied examples of stone pulpits, as many existed in Continental churches which some of his readers had no doubt seen. There was, for instance, a very massive one at Perugia, in front of the cathedral, which was intended for occasional preaching. As preaching was an important part of the English church service, in his opinion no architect ought to design a church without keeping that consideration in view. If the pulpit were of wood, it might be put near a pillar, which ought to be decorated, with a view to its reception.

The Chairman remarked that a large transept was open to two objections: it divided the congregation, and it was extremely difficult to hear in other portions of the church. Large transepts were better suited to Roman Catholic churches, where there was more ceremonial and less pulpit instruction.

Mr. R. Spiers said that, in making a design for a Protestant church in France, he selected the octagon shape, in consequence of the client objecting to Gothic, and that when he put up his façade the building looked like a Dissenting church. The shape, however, was appropriate for seeing and hearing.

After some discussion on the discomfort of the present pew system,

The Chairman said that, unless the roof of a church were also built of iron, there would be an objection to the use of iron pillars. The difficulty might, however, be got over by substituting a cluster of four columns for one pillar. In reference to the orthodox material to be used in the construction of communion tables, it was generally held that stone was "Puseyistic." In a case which came within his knowledge in Lancashire an incoming clergyman attempted to remove the stone altar, and an outcry was raised that he was a Puseyite.

Mr. A. Allom asked whether Mr. Blomfield had taken into consideration the large congregations of the present day, such as met at the invitation of Mr. Spurgeon and the class of preachers called "popular"? Such congregations could only be accommodated by a great span of roof (as at Exeter Hall), in a circular building, or one in the shape of the ancient Forum.

Mr. Blomfield replied that he had not contemplated any such buildings. Churches capable of holding 2,000 persons were those which Sir Christopher Wren spoke of as the largest for general convenience.

On the motion of Mr. Herring, a vote of thanks was passed to Mr. Blomfield.

THE GRANITE EXPORT.—HARBOUR OF ST. SAMPSON, GUERNSEY.

The Port of St. Sampson is situated on the east side of Guernsey, and extends some distance inland, where there is a wall, called "The Bridge," which divides the parish of the Vale from St. Sampson.* This wall was built in 1803, to keep the sea from penetrating across the island, as it had done since 1204: 5,000*l.* were made by this project, and now corn grows and houses stand where the billows of the Atlantic rolled at the commencement of this century. On each side of the harbour are quays. Outwards there is a breakwater; and nearer to the harbour is a pier, extending from the Vale Castle: further inwards are the real pier-heads.

The trade of this place and neighbourhood consists in the preparation and exportation of granite, for the north of the island is the situation of the grey granite of commerce: it is worked all round this neighbourhood, and even on the quays. Guernsey granite is of a better quality than that of Dartmoor or Aberdeen: the experiment was tried in the Commercial-road, London. After having been seventeen months laid down in the tramway, these different kinds were taken up, and found to have lost thus:—

Name of Stone.	Sup. Area in feet.	Original Weight.	Loss of Weight by wear.
	Ft.	Cwt. qr. lbs.	lbs.
Guernsey	4,734	7 1 12½	4½
Peterhead (blue)..	3,484	4 1 7½	6½
Aberdeen (red) ..	5,375	7 2 11½	11½
Dartmoor	4,500	6 2 25	12½
Aberdeen (blue) ..	4,823	6 2 16	14½

This table shows that the Guernsey granite lasts rather more than three times as long as that of the blue Aberdeen. The granite of Guernsey is remarkable for its resistance of atmospheric influence for a long period. Lettering cut in the arch of a doorway is as clear and sharp in 1860 as when erected. It is also extremely hard and ponderous, thus resisting friction and wear of all kinds, and is generally exported by colliers, who, after bringing coal, return laden with a cargo of stone. The duties of the harbour of St. Sampson realize an amount of about 1,450*l.* yearly: in 1843 the dues only amounted to about half that sum. The number of tons exported from this harbour average yearly 116,000; in 1842 there were only exported about one-third of that quantity. One penny per ton is the duty on the stone exported: the prices for freights for London vary from 6s. 6d. to 7s. 6d. per ton. E. A. M.

* William Staines, once Lord Mayor of London, worked in this neighbourhood.

TENDERS FOR THE NORTHERN MIDDLE LEVEL SEWER.

METROPOLITAN BOARD OF WORKS.

At a meeting held on the 21st inst., the Board proceeded to open tenders for the completion of the Northern Middle Level Sewer Works, rendered necessary by the abandonment of the contract by Mr. Rowe, who had originally obtained it.

The engineer (Mr. Bazalgette) said, the matter in reference to Mr. Rowe stood thus: Engineer's original estimate for the work, 280,000*l.*; taken in 1859, by Mr. Rowe, for 264,533*l.*; work done by Mr. Rowe, 10,739*l.*; leaving due on the original contract to Mr. Rowe, of work unfinished of the value of 253,794*l.* The following are the amounts of the tenders sent in:—Mr. Moxon, 322,675*l.*; Messrs. Brassey and Co., 329,800*l.*; Mr. Dethick, 335,000*l.*; Mr. Thirst, 345,000*l.*; Rowland, Brotherhood, and Co., 346,500*l.*; Mr. W. Hill, 357,000*l.*; Mr. J. Diggles, 363,000*l.*

On the motion of Mr. Carpmael, seconded by Mr. Doulton, the tender of Messrs. Brassey and Co. was accepted. The present estimate for the unfinished work is 329,800*l.*, showing an excess to be paid on the new contract of 76,106*l.*

THE GARDENS OF THE HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

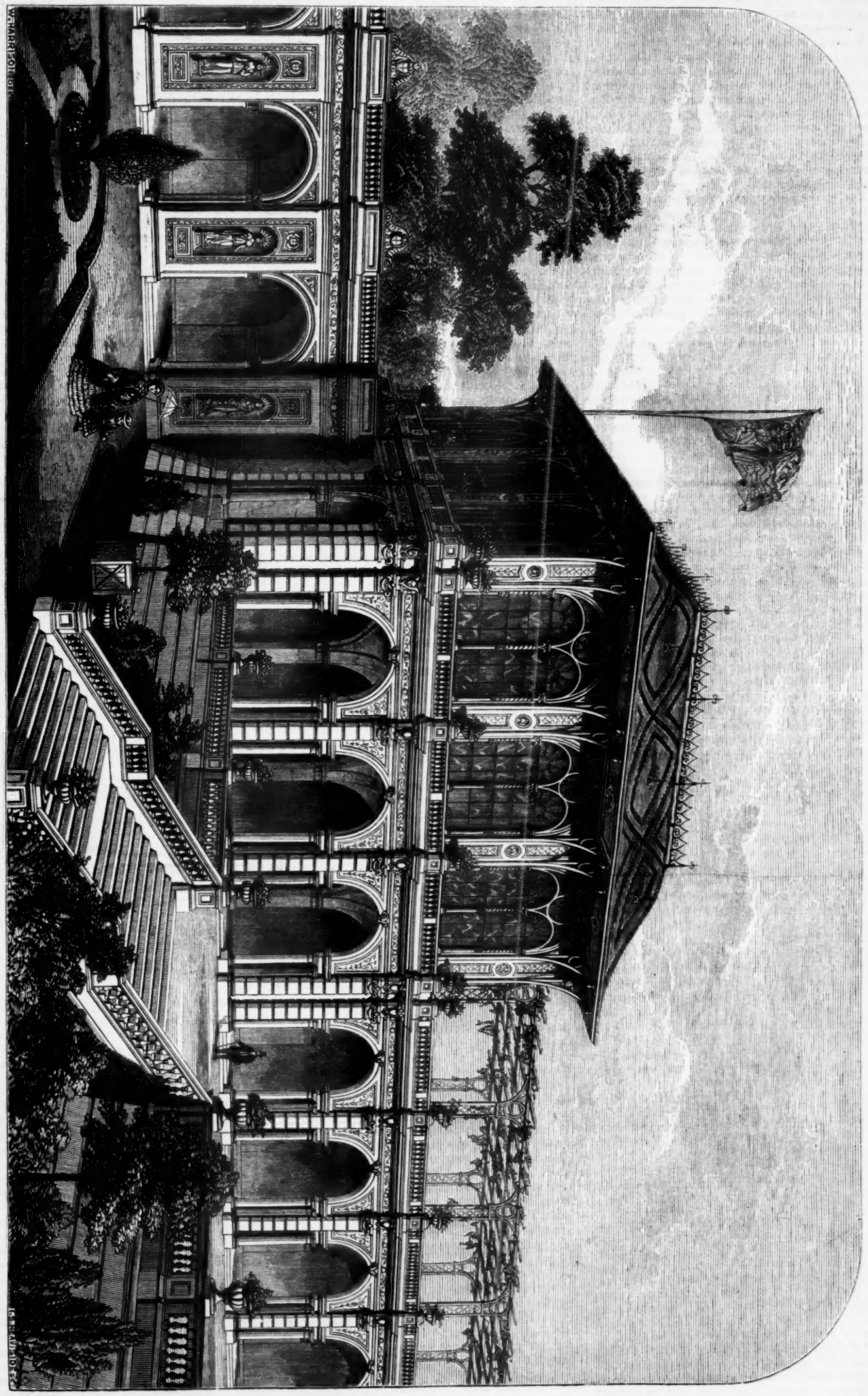
Loiterers in the fine new roads of Brompton, around and through the land belonging to the Royal Commissioners of 1851, will observe long skeletons of arcades springing into being, and on which, until the occurrence of the present frost, men were busily engaged. When the spring comes, the whole will speedily get into shape. What this will be in one part, the engraving in our present number, representing the upper arcade, with a pavilion as suggested by the architect, Mr. Sydney Smirke, shows. It is but fair towards all parties to say that in the first instance, Mr. Smirke acted only for the Royal Commissioners, and had nothing to do with the works about to be executed by the Horticultural Society. Quite recently, however, the latter body have placed in his hands the architectural portion of the middle arcades connected with Mr. Durham's Memorial of the 1851 Exhibition now in progress, the fountains, and the terraces. Captain Fowke has the direction of some of the works for the Horticultural Society.

Returning to our engraving, the upper arcades are circular on the plan, and are built of Portland stone and brick, faced with moulded and rubbed red bricks. The frieze, capitals, and spandrels, will be of tesselated work, or glazed terra cotta in colours. The height is 26 feet; the internal width in the clear is 23 feet.

The middle arcades are straight, each 630 feet long; the height to top of cornice is 23 feet; the clear width within 20 feet. The back walls and roofs of these middle arcades will be temporary. The arcades are of Portland stone and moulded and rubbed red and yellow bricks. The niches, enrichments, and statues, are to be of terra cotta, glazed, and in colours.

The pavilions are intended to be of wrought and cast-iron, partly gilt and partly cased with glazed and coloured terra cotta. The erection, however, of these pavilions will probably be postponed for the present; and may not be carried out at all.

In the lower arcades terra cotta columns are being used. Mr. Nesfield has the entire control over the garden works, and has made some progress. The landscape gardener, however, suffers under the great inconvenience of having to wait for Dame Nature. In whatever pelting haste man may be, Nature teaches us a lesson of deliberate progress. *She* is slow and sure, whilst man goes blundering on in hot haste, very fast, and some times very wrong.



THE ARCADES AT THE HORTICULTURAL GARDENS, SOUTH KENSINGTON, WITH SUGGESTED PAVILION.—MR. SYDNEY SMIRKE, R.A. ARCHITECT.

OF THE RESOURCES OF DESIGN IN THE NATURAL KINGDOM, FOR ARCHITECTURAL DECORATIONS.*

> "Nature,—enchanting Nature, in whose form
> And lineaments divine I trace a hand
> That errs not, and find raptures still renew'd,—
> Is free to all men,—universal prize."—*Cowper.*
>
> "Stripp'd of her ornaments, her leaves, and flowers,
> She loses all her influence."—*Cowper.*

FROM time immemorial man has endeavoured to imitate and to convert to useful purposes the beautiful forms presented to us in the vegetable kingdom.

In the buildings of the Assyrians, Egyptians, Greeks, Romans, and the Middle Ages, ideas culled by our ancestors from nature can be traced, either undisguised and self-evident, or being conventional representations founded upon material objects. And this is not surprising, for—

> ——"Who can paint
> Like Nature? Can imagination boast,
> Amid its gay creation, lines like hers?"—*Cowper.*

Some writers object to "copying the forms of nature," and urge that "we have already, in the floral carpets, floral papers, and floral carvings of the present day, sufficient evidence to show that no art can be produced by such means; and that the more closely nature is copied, the further we are removed from producing a work of art." Now these assertions are untrue, and therefore unjust: the floral designs and carvings of the day are insipid and unmeaning, simply on account of the laws of nature having been disregarded in their production: the Gothic architects of the fourteenth century did not *merely copy nature*, they selected, adapted, designed, and proportioned natural objects upon buildings and works of art, as Nature herself would have arranged them; and therefore the incapacity of modern designers must not be brought to bear against the artists of the fourteenth century, who so successfully followed nature. The fault evidently may be traced to want of skill, and not to the use of natural productions. "The defects," it has been observed,† "arise from various causes, and are of various kinds; but there is one which we notice above all, on comparing the works of these days with those of the thirteenth and fourteenth centuries; namely, the absence of that *spirit* which is so observable in ancient carving."

It is the practice in the present period to imitate natural leaves upon capitals of columns, and to term the process *copying from nature;* and how is this accomplished? Not in the manner of the fourteenth century: it is certainly not an easy task to "go back to nature, as the ancients did:" the Mediæval artists surpassed the sculptors of Greece and Rome in this particular. In Rome, the foliage, fruit, and flowers, were strung in wreaths and festoons, as if fresh gathered, without any further attempt at form or arrangement. Now the Mediæval architects *worked with nature, id est,* they so wrought and distributed the stems, leaves, and flowers in their buildings, that they appeared to grow with greater life and spirit than they ever did in nature: the leaves were not (as they are in our time), sculptured flat, insipid, and spiritless: a vigour was imparted to them that produced a well-balanced and agreeable light and shade.

> "Yet so delightful mix'd, with such kind art,
> Such beauty and beneficence combined;
> Shade, unperceived, so softening into shade,
> And all so forming an harmonious whole."
> *Thompson.*

The architect should personally select the leaves, flowers, and other natural objects, for his proposed ornaments, as drawings and engravings (however beautifully executed) will not show the form, light, and shade, which exist in the living specimens. The point I wish to urge is, that the laws to be found in nature should be transferred to art, not by literally copying from natural productions, but by forming, disposing, and designing ornament upon natural principles, and, as far as practicable, rendering it symbolical.

By the means of symbols, a sacred character has been given to ecclesiastical buildings, and religious instruction imparted from time immemorial; and it is certainly more interesting and edifying to design ornamental combinations with an intention, than to introduce unsightly and unmeaning decorations. The utility and importance of symbols cannot be doubted, and the *extent* of their employment may be partly an open question; although they are at the present period seldom used; and when adopted, are often selected without discrimination.

In the ornamentation of our old cathedrals and churches, appropriate decorations were generally produced: each flower, each leaf, each device, had a *significant meaning:* "this principle," observes Pugin, "is completely overlooked at present: any design, so long as it is considered to *look pretty*, is introduced indiscriminately for all seasons, and in all situations."

The ancient sculptors were scrupulously attentive to their discriminative symbols. In the *Assyrian* sculptures, the pine cone and honeysuckle ornament were frequently used: with the latter the Greeks were evidently acquainted. The leaves and fruit of the vine alternating upon horizontal branches formed an arbour for an Assyrian king and queen. The lily and other flowers were selected for the adornment of Solomon's temple: the palm-tree was carved upon the walls and ceiling: for the capitals of the columns the pomegranate (symbol of sacred things and fertility), was selected; and the olive tree was found serviceable for the cherubim and the doors.

The *Egyptians* formed columns of clustered stalks of the papyrus, with unopened buds for the capitals; and with these were decorated the Temple of Luxor, Thebes; the Temple of Karnac, the Temple of Philæ, &c. The palm leaf supplied the capitals of the columns of the Temple of Edfou; and in several of the temples built while Egypt was governed by the Ptolemies. The lotus (sacred to Isis) embellished the columns of Dendera.

With the *Greeks*, the acanthus flourished: it was nurtured and brought to a wonderful art-perfection. The species supposed to have been employed for the Corinthian capital is *Acanthus mollis*, or *Brank-ursine;* but Dr. Sibthorp considers that the *Acanthus spinosus*, still called *ακανθα* is the one meant. This, however, does not affect our inquiries, and may be left to antiquaries to deal with. The capitals of the columns of the Tower of the Winds, at Athens, have one row of acanthus leaves; and the Choragic monument of Lysicrates at Athens is also decorated with these leaves. The Greek leaves have been said to have more of the natural character of the acanthus: the Roman acanthus is more artificial. The Greeks chose the *lotus* for the upper range of leaves on the capitals of the Tower of the Winds at Athens, and the upper leaves of the ornament on the apex of the roof. Leaves of this plant decorate a marble *stêlé* (Stuart, vol. v., p. 53): they are also to be seen in the Erectheum. Many capitals at Athens and other parts of Greece are embellished with these leaves. The *laurel* (dedicated to Apollo) is wrought on the outside of the Choragic monument of Lysicrates at Athens; laurel wreaths occur on medals. The *honeysuckle* (which the Greeks borrowed from the Assyrians, and wonderfully perfected) was extensively employed in the Erectheum, at Athens, also on sepulchral marbles and vases, and on a capital from the Temple of Apollo at Branchydæ, near Miletus. An *amaranthine* wreath was worn at the burial of Achilles, and often worn at funerals in the early ages of Greece: cultivated, also, on the graves of the ancients were the asphodel (sacred to Pluto), the myrtle, and the mallow. A brazen *palm-tree* sheltered the golden lamp made by Callimachus, in the Erectheum: the palm was also used for wreaths:—

> "With wreaths and palms to bind the victor's brow."
> *Virgil.*

In the Pandrosium, over an altar, grew an *olive* tree (dedicated to Minerva). On medals are sometimes found garlands of olive. In solemnizing the festival of the Dionysia, garlands of *ivy* (dedicated to Bacchus) and "wreaths of fresh-blown roses" were used. With *violets* were the Muses sometimes decorated,—

> "So will'd each muse divine, with violets crown'd."

The central acroterion of the Temple of Ægina had female figures on each side, holding a *pomegranate* flower. *Anthemion* is stated to be the Greek name of the plant *Nigella Damascena*, which was given to it for the beauty of its flower. The term 'Ανθίμιον is derived from the radical word Ανθος, a flower: according to Theophrastus it was the name of a plant, and a term applied to artificial floral ornament by Xenophon. The Grecian architects applied the term anthemion to antæ, and on the interior wall of the Erectheum portico, as well as to similar ornaments.* The *parsley* was also called in to adorn various edifices at Athens;† and the *horse-chestnut* has been thought to have suggested the "egg-and-tongue" moulding.

The *Romans* extended, but did not improve, the ornamentation of Greece. The capitals of the columns of the Temple of Vesta, at Tivoli,—of the Arch of Septimius Severus,—of Jupiter Tonans, Rome,—were decorated with acanthus* leaves. These leaves were also used in modillions, mouldings, vases, and in architectural and sculptural enrichments generally. The *olive* supplied the capitals of the columns of the Arch of Titus, the Temple of Jupiter Stator, &c. *Olive* and *oak* leaves, *roses*, &c., occur in the Arch of Titus; also *honeysuckles* in the cimatium of the same building. The *ivy* is visible in the festoons on the entablature of the Temple of Vesta, at Tivoli; and in the festoons in the panels at the sides of the entrance of the Pantheon, at Rome, are branches of fruit and flowers of the *vine, oak, pomegranate, olive, bay*, &c., elegantly arranged, and executed with the appropriate leaves attached to each.

The Mediæval sculptors ornamentally combined natural forms in their works with considerable success, and selected, among many other vegetable productions, the strawberry, vine, holly, woodbine, oak, fir apple, ivy, avens (or herb benet), fern, broom, euphorbium, iris, laurel, ranunculus, sunflower, palm, maple, hawthorn, acanthus, common purple iris, myrtle, lily, dog-rose, red anemoné, thistle, wood-sorrel, briony, mallow, mugwort, hazel, elder, marygold, hop, kale, cyclamen, or gazelle's horn, almond-tree, &c. These plants were symbolically chosen and expressed: for instance, the holly (symbol of the Resurrection), was sculptured on the sides of a monument in Chichester Cathedral; the vine, symbol of the Saviour; the ivy, immortality; the oak, virtue and majesty; palm, martyrdom; lily, purity; myrtle, peace: yew, was planted generally to the south of the church, to supply green for the decoration of churches at the great festivals; and the branches of yew trees also served anciently for palms in the procession of Palm Sunday.

In comparatively recent times the resources of the natural kingdom have been successfully employed in the adornment of churches. The stalls of the choir of St. Paul's Cathedral have festoons of foliage, flowers, and fruit, beautifully arranged and sculptured, by Grinling Gibbons, in the most artistic manner, and proving the fallacy of the assertion, "that the more closely that nature is copied, the farther we are removed from producing a work of art."

It will thus be seen that architects and artists have, from time immemorial, selected Nature's gifts, and thought them not unworthy ornaments for the adornment of sacred edifices.

In a little work, entitled "Manuals of Gothic Ornaments," it is stated that "perhaps we also, as they (our ancestors) did, must in the first instance attain like skill to theirs, by the study of the labours of those who have gone before us, recognising, in the past, however, those principles which are always to be found if diligently sought for,† and seeking to work in accordance with these principles rather than slavishly imitating style. As with them, therefore, so with us, first the stone remains of olden times, then the freshness of nature to give vigour and originality; and, when power and knowledge are thus obtained, then, but not till then, may we attempt new styles; and the time may not be far distant when, instead of the diagrams, scrawled over with figures and arithmetical calculations, the sculptor will take boughs gathered from the tree, and, arranged to suit his construction, will copy them at once with his chisel. But at present our models must be of stone,—these first, and then nature."

The above advice to sculptors is very questionable; as, without calculation, most lamentable failures frequently occur. Prior to sculpturing a statue,‡ cross, finial, or other ornament, it is absolutely necessary that the *altitude* of its position in the building should be accurately ascertained. Without this knowledge the sculptor often renders his work either too large or too small, and is seldom, if ever, successful, without the calculation. In illustration of this, we all recollect the well-known competition between Alcamenes and Phidias. These sculptors were each employed to make a statue of Minerva, in order that the finest of them might be chosen, and placed on a very high column. When the two statues were finished they were exposed to the view of the public. The Minerva of Alcamenes, when seen near, seemed admirable, and carried all the voices: that of

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* By Mr. W. Pettit Griffith, F.S.A. Read at the Liverpool Architectural Society, on 26th instant.

† "Parker's Manual of Gothic Ornament."

* See chapter on Grecian ornament, in Stuart and Revett's "Athens," vol. v.

† Stuart, vol. v p. 53.

* Virgil alludes to the acanthus in the "Æneid," book i. v. 649 and 711; and in the "Georgics," book iv. v. 122 and 123. Ovid notices this plant (Met. xiii. v. 701).

† It is to be regretted that the author of the "Manuals" has omitted to give definite principles for the guidance of the workman.—W. P. G.

‡ It had been objected that the statues in the west front of Wells Cathedral were unnaturally tall; but it had been proved that this was intentional, in order to give them a proper effect when viewed from below.—W. P. G.

Phidias, on the contrary, was thought insupportable;—a great open mouth, nostrils which seemed drawn in, and something rude and gross throughout the whole visage. Phidias and his statue were ridiculed. "*Set them*," said he, "*where they are to be placed*,"—which was accordingly done, alternately. The Minerva of Alcamenes appeared then like nothing, whilst that of Phidias had a wonderful effect from its air of grandeur and majesty, which the people could never sufficiently admire. Phidias received the approbation his rival had before, who retired with shame and confusion, very much repenting that he had not learned the rules of optics.

Although the Greeks may have extensively borrowed their ideas of conventional foliage and ornaments from the Assyrians, yet it cannot be denied that, in the hands of the Grecian sculptors, ornamentation was matured and perfected, and has never been surpassed.

Interesting as the representations of flowers and other natural objects may be, in the works of the Middle Ages; and addressed as they are to our feelings and love of nature, they (in an educational sense) fall considerably short of the intrinsic beauty of Classic floral decorations. I observed, in 1847,* that "architecture has not yet reached its *summum infinitum*. Gothic architecture, now the rage and the fashion, will, in the course of very few years, present a different aspect: the far-famed cathedrals and churches of England, so adored and looked up to with wonder, and restored with precision, will be gazed upon as crude specimens of a not very enlighted age: the ugly gargôyle, the representation of monkish contentions, and other vagaries, will have passed away; and a style, based upon all that is beautiful and good, will rear its head, decked with Nature's gifts in a more Christian-like manner, and with more science and art."

Since the foregoing was written, a decided improvement has been effected; the miserably-executed heads of Mediæval kings—cardinals, monks, and wimpled females,—are now seldom produced, and floral ornaments and other sculptures have been more appropriately substituted.

The Romanesque may be regarded altogether as a transitional period, in which the sculptors introduced in their decorations attempted representations of divine and human figures, animals, birds, foliage, &c., with such incongruity, ignorance, and bad taste, that but little advantage can be derived from a study of their works. They tried to imitate Nature, and studied her, but did not make any progress.

In the thirteenth century the artists had not the capacity to imitate nature, and consequently remained contented with a monotonous trefoiled scroll, which pervaded all their works. In some instances great taste and elegance were achieved, and in every respect the labours of the thirteenth century were wonderfully in advance of all the productions of the Norman era.

During the fourteenth century natural types were very successfully employed upon ecclesiastical and secular buildings: the foliage was well distributed, always upon a system, and considerable vigour imparted throughout. The numerous examples of this period are deserving of study and a careful attention.

The fifteenth century produced works of less vigour, and therefore not so worthy of being studied. The foliage was distributed in too mathematical a manner, which created a formality neither artistic nor pleasing.

In studying, therefore, the works of former ages, we are not so devoid of ideas as to literally copy any one example. The most valuable lesson to be culled from our ancestors' productions is not so much what shall be selected for adoption, as that which is to be *avoided*.

If Mediæval architecture and sculpture were to be divested of incongruities, of which there are very many, much of its sculptured work being caricatures, a more perfect and beautiful style would necessarily be the result. The Greeks *perfected* their art: the Mediævalists have left their works crude and unfinished. Imagine a cathedral adorned with sculptures, illustrating events in Scripture history, the sculptures being rendered with the same care as that bestowed by Phidias on the Pagan temples. No doubt there is much yet to learn, and that in this country art has not yet reached its culminating point.

During the Middle Ages, at home and abroad, natural ornamentation was cultivated with more or less success: the sculptors sought the fields and the hedges, in lieu of the *plaster casts* and the *books*. Nature was embodied in stone and wood, in all her loveliness,—not literally copied, as supposed to be by some architects, but so arranged and manipulated as to produce a most harmonious effect. By carefully examining the several churches and other buildings of the present day in which natural ornament is adopted, it will be observed that the leaves and flowers are represented dead, flat, insipid,—no petrified life, no light or shade; and what is the consequence or result? Some writers, of course, object to "copying the forms of nature,"—and others to "the want of force and vigour in nearly all, and the absolute vulgarity of many, of the modern works professedly founded on nature." To successfully embody the works of nature in art-products, care must be taken to design in accordance with natural laws.

In teaching, necessity demands the employment of a mechanical process in setting out ornamental combinations, let it be geometrical or otherwise: the geometrical method is the most natural, as it is self-evident and universal in the floral kingdom. The method adopted in setting out the ornaments in most of the buildings of Rome is alluded to by Taylor and Cresy, in their Architectural "Antiquities," vol. i. p. 10: all these methods, be it understood, are valuable only as a means to an end. The spirit to be thrown into the work must be in the *mind* of the artist.

The projection of each flower, the particular curl of each leaf, the relief of each stem, must be left to the sculptor: he must give the life or the spirit to his work. All the mechanical means in the world will not create a genius: genius is a natural gift; but a correct taste is the result of a good education. It should also be borne in mind that although a man of genius may design and create wonderful productions, yet they may be all in bad taste. To appreciate and to understand the best works of the age of Pericles and the Middle Ages requires education. Thus the importance and necessity of obtaining and possessing examples of correct art for educational purposes are self-evident. Works of genius, unless in good taste, are better avoided—at least, as far as the pleasure to be derived from the examination of beautiful objects is concerned.

Deformities in nature are exceptions to the rule: in the Renaissance and Elizabethan styles, distortions form the rule. It is of importance to distinguish good art from art *per se:* it is an art to sculpture monstrosities. They may be spiritedly executed, and with much talent; but to admire or to encourage such productions would exhibit a morbid taste, to the injury of good or perfect art, and consequently dangerous to art-progress. Examples of correct art should be purchased and preserved, and all bad art destroyed—at least, not retained for admiration or imitation.

I take this opportunity of again protesting against the use of Gothic architecture for secular purposes. How can we retain a devotional feeling towards the House of God if our theatres, private dwellings, public vestry-halls, and other secular buildings, be decorated with ecclesiastical architecture? In 1847* I stated that "the Pointed style of architecture, in a religious point of view, is far superior to every other method of building for ecclesiastical purposes; and, with judicious management, may be adapted to accord with propriety in Protestant churches, by divesting it of all those forms which were used for certain ceremonies which we discard, and using only such as are in accordance with our views and suited to our requirements;" and I considered that "custom-houses, excise offices, mints, post-offices, museums, banks, offices of assurance, &c., &c., are best adapted for a style of architecture based upon the Classic styles, which, as regards light and convenience, are the best fitted."

Classic architecture requires an educated mind to appreciate it: Gothic architecture appeals more particularly to the feelings. The latter is essentially a Christian architecture, not so much on account of its use in ecclesiastical buildings (as Classic architecture has been similarly employed), but it is not possible for any one to examine the minutest detail of that style without perceiving in it the impress of a Christian mind. In Classic churches we have pagan ornaments used as decorations, even in modern times.

Mediæval architecture (or a style based upon it) is peculiarly fitted for churches, parsonage houses, schools, and other buildings under the surveillance of the clergy; and no doubt the laity would always reverence it: it, however, is an act of extreme egotism for any one to dictate the employment of Gothic architecture for edifices of all denominations, to the entire exclusion of the Classic styles.

The styles of architecture which were common to Egypt, Greece, Rome, and the Middle Ages, are, as it were, dead languages: they belong to the past; and, although a knowledge of them is necessary to enable us to understand the history and feelings of former times, they should not be cherished for reproduction, nor their mutilated and useless and decaying remains preserved (except the intelligible parts in national museums) for *picturesque* studies, either for the painter or poet to muse upon, to the detriment of future progress. Until the system of idolizing *ancient* architecture be banished, we shall never be encouraged to think for ourselves. The Decorated style would not have been produced if the preceding, or Early English, style had been religiously cherished and preserved.

The remains of ancient architecture ought to be carefully measured and delineated, and all sculptures and ornamental portions preserved in museums or proper places built for their reception, so as to form studies for reference, contemplation, and instruction; but not for reproduction in new buildings. To preserve old ruins half-defaced, until every discernible feature of form or expression be effaced by exposure to the elements (which can never be ultimately resisted), would be of no service to the architect, and be only encumbering the earth with picturesque ruins, sublimely unintelligible to all except romantic painters and love-sick maidens.

Although it is much to be lamented that the beautiful works of the Mediæval architects, sculptors, and others, have been (independently of the effects of atmospheric influence) wantonly injured; still, it is a great satisfaction to know of the many examples of early art which have been spared for our contemplation and instruction. The extensive system of *white-washing* every object in the sacred edifice, adopted by churchwardens since the Reformation (until recently), has been of eminent service. To this system we are indebted for the preservation of many finely-sculptured ornaments, which have been thus hidden from the gaze of the ignorant destroyer, until the coming of a more enlightened age.

The cultivation of the fine arts in this country is progressing, and the Government schools will no doubt so far improve the education of the people as to teach the latter at least to respect works of art. The great improvement which has taken place with regard to ecclesiastical architecture has been universally acknowledged. I allude more particularly to its being preserved from mutilation and neglect. The extraordinary neglectful state of our ancient churches, and the ignorance of the beauty of their architecture, were alluded to in strong terms in the early numbers of the *Ecclesiologist*, and not without reason. There is, however, still existing a want of knowledge of the true principles of Mediæval architecture; and, until this has been properly supplied, not only is the money that is expended upon the so-called restoration of our old churches, and the building of new churches, misapplied; but positive injury is done to the former. The stereotyped excuse for bad architecture is the want of funds. This excuse our ancestors never needed, as they knew how to build their churches in accordance with the money to be expended. When a church or a chapel was erected in the Middle Ages, if the means were small, the building was not crippled. It had not a meretricious front, with the sides and back executed in plain work, but a general uniformity of simple detail was imparted throughout the building. It is not, therefore, the money alone that is required for the production of correct ecclesiastical architecture, so much as a knowledge of first principles and experience.

> "One thing there is more needed than expense,
> And something prior e'en to taste—'t is sense."

I have no doubt that when experience has been gained, through the erection, *imprimis*, of many premature new churches, that a proper supply of funds will be forthcoming. It was so in former times. "Pericles," says Müller,* "induced the Athenian people to expend upon the decoration of Athens, by works of architecture and sculpture, a larger part of its ample revenues than was ever applied to this purpose in any other state, either republic or monarchical. This outlay of public money, which at any other time would have been excessive, was then well timed, since the art of sculpture had just reached a pitch of high excellence, after long and toilsome efforts; and persons endowed with its magical powers, such as Phidias, were in close intimacy with Pericles."

The sculptures and ornamental decorations in ancient cathedrals and churches were usually

* Ancient Gothic Churches.

* Ancient Gothic Churches, pp. 3, 9.

* History of the Literature of Ancient Greece, p. 381.

historical and symbolical expressions, and offered Scriptural instruction. Attention has been directed to the importance of historical sculpture, and notice taken of the angel choir at Lincoln, which gives an epitome of the Advent of the Saviour; the 308 pieces in the ceiling of Norwich Cathedral (which illustrate the entire history of Revelation); the Virtues and Vices at Salisbury; and many other valuable examples.

A church, being a material edifice, must be properly proportioned and erected. You may call the construction of a building a mechanical process; its decoration, however, is quite a different matter: in this the artist and sculptor have (as it were) to impart vigour and spirit to the whole work, and thereby render it an intelligent and a living monitor. "A work of art," says M. Fould,* "is not a thing quite inanimated: life exists really in it: it is that sentiment which is found everywhere, and cannot be assigned anywhere. The ancients have excelled in the art of animating their works, only because they possessed that general and complete instruction which sound studies give."

In conclusion, it is to be regretted that no real progress in architectural sculpture has been made. In 1848,† I considered that the advancement of art towards perfection would be hastened by the establishment in this country of a national academy upon liberal principles, in which, *inter alia*, the art of modelling and sculpturing (upon a large scale) natural ornamentation for all purposes ought to be propounded.

I cannot imagine more instructive and beautiful sources for the inspiration of the sculptor's chisel than the scenes in the Old and New Testament,—subjects scarcely touched upon in the adornment of our new churches.

Prior to anything like excellence being attained in such important subjects as those offered by the Scriptures, our sculptors will have to toil long, and must not enter upon the task without feelings of reverence and respect to holy things.

Useful and beautiful as well executed arrangements of foliage and flowers always are in symbolizing Scriptural subjects, still it must be admitted that they are of minor importance compared with historical sculptures. Floral forms address us through the medium of symbolism, but historical sculptures are at once intelligible to the most ordinary understanding.

Great and praiseworthy efforts have been made at the Architectural Museum to direct attention to the vital importance of historical sculpture, but hitherto not with that success which its advocates so anxiously desired. I have no doubt, however, that ere long our churches and public buildings will receive embellishments of a higher order of art, and not only vie with, but eminently surpass, all former efforts at home and abroad.

* In *Journal des Débats*.
† Ancient Gothic Churches, pp. 26—31.

THE FREE PUBLIC LIBRARY AND MUSEUMS, LIVERPOOL.

THE form in which a citizen of Liverpool has chosen to convey a gift to his fellow-townsmen is a very significant proof of our national development. In the old times the same desire to benefit his generation and posterity would have taken the form of a hospital for the sick, almshouses for the aged poor; or, at the utmost, in an educational direction, schools for a limited number of orphan children. The gift of a free library would have been but a mockery in an age when few could read and still fewer could understand what they read; but now, so exceptional is utter ignorance, and so general is a certain amount of intellectual culture among the working classes, that a public library has been considered the most useful and appropriate donation a wealthy merchant could bestow upon his fellow-citizens. We cannot, however, congratulate ourselves that this ripeness of the fruit Lord Brougham and his fellow-workers have cultivated with so much zealous effort, is general. The same week that saw Mr. William Brown present a library building to Liverpool witnessed a community in sea-port Sunderland calling public meetings, and protesting, with the greatest vigour, against a rate being levied for the purpose of establishing a local free library,—an opposition more to be wondered at as a contribution towards the proper contents of such an establishment, 4,000 volumes of philosophical works, has been recently presented to the town by a private individual. All the more honour to Mr. Brown for leading the van in a movement which cannot fail to exercise a most beneficial influence. This was freely accorded by the dense crowds that kept Liverpool *en fête*, not only on the inauguration day, but on that preceding it, as well as by a large assembly of the working classes, who, in recognition of the generosity that prompted the good deed, publicly presented, for Mr. Brown's acceptance, a silver shield and a clock. The ceremony of the inauguration we have already spoken of, its processions, deputations, and dinner. In contrast to this all will read with pleasure of the simplicity of the veritable opening of the library, which took place on Monday, the 3rd inst., when the clerk of the works reverently asked for the first book, the *Bible*. The usefulness of the library is enhanced by a comprehensiveness in its arrangements that has included reading-rooms, a lecture-room, a museum, a gallery of inventions, lavatories, and a depôt for the safe custody of the parcels with which excursionists seldom dispense. The natural history collection presented by the Earl of Derby will be deposited in the museum. The pictures from the old library, works of the old masters, and copies of royal portraits, are already hung in the principal reading-room. The British and Foreign Bible Society have voted the library copies of the Scriptures in the hundred and fifty languages into which they have been translated; and private munificence has made contributions of scarcely less value. Thus much for the design of the liberal donor, and for the manner in which his aim has been accepted and appreciated. We will now proceed to examine the mode in which the fabric expresses his intention.

In these days, when vigorous efforts should be made to grapple with the evils which exist in all our towns, in the insinuative accumulation of narrow and confined thoroughfares; and when bold measures should be proposed to remedy these evils, which should comprehend sweeping away even *acres* of fever-breeding tenements to enlarge the lungs—the public squares and main streets;—when evidence of the power and might to do this exists in the case of a great railway company at Birmingham, where to obtain an approach to, and the erection of the great central station, a dash and clearance has been made through a mile or more of closely-packed houses;—we have looked with interest upon the progress which the Corporation of Liverpool has made in this direction, in their co-operation with the donor of the Free Library Building. As to the site of it: almost in the centre, in the very heart of the town, is a space which, if the corporation continue as it has commenced, to take advantage of, would become as grand as a forum in ancient Rome. This space is bounded on the east side by the Lime-street railway terminus, and any one of the myriads of visitors arriving here would behold in the centre the solemn huge dark pile—St. George's Hall, and new Assize Courts. To the west of this magnificent new building he would find a strange contrast in the gaunt tower and body of St. John's Church,—a building erected in 1784, in the vilest Churchwarden Gothic. The funereal aspect of this church is made more dismal by its contiguity with the leviathan classic building, and with the ghostly appearance of its large graveyard, where almost every gravestone has been laid flat, and the inscriptions are trampled upon and erased. The removal of the church and the proper inclosure of the vast stony churchyard will be as necessary for the completion of the new aspect of this great forum of Liverpool which we are describing, as was the removal of the old infirmary which stood on the site of the Assize Courts, and the Haymarket adjoining. On the south and west sides the Corporation has yet to exercise, together with private individuals, a discretion which should comprise, for the beautifying of this noble site, the removal of the strange medley of hotels and petty shops, and the re-erection of churches, clubhouses, or public institutions in their places, of the extensive character of the Free Library, which is erected upon the north side. On this same north side the Corporation has wisely commenced a scheme on a grand scale, and it deserves all praise for seconding Mr. William Brown in his noble donation of the Free Library building. In the alterations in the levels in Shaw's Brow, upon which the building is erected, in the construction of extensive foundations to form the platform upon which the building is placed, and in the terraced approach or platform which is regarded as the high-level road over Byrom-street into Dale-street, a sum nearly approaching 100,000*l.* has been expended,—this amount having been furnished in part out of the surplus revenue of the Corporation, and in part out of money raised upon the security of the Museum rates.

The site which the architect for the Free Library building has had to work upon was most advantageous. And although the east end immediately adjacent is now occupied by an uncovered vegetable-market, with its attendant nuisances, and the rear of ugly tenements is visible adjacent, and although the west end is occupied by vulgar buildings, including a yard for the sale of old building-materials, immediately attached to one of the principal entrances of the museum, we disagree at once with the apologies put forth by the local papers. It is asserted that the surface of the site, a hanging level, is very unsuitable to the style used in the building; and that the architect is not responsible either for the site or the style. We bear in mind the result of the famous competition connected with the designs for this building, when prizemen were displaced, and the local corporation surveyor threw down the gauntlet, and undertook to surpass everything that had been done before in the matter.* By the adoption of a style which has for the centre of the building a deeply recessed hexastyle Corinthian portico—a diminutive copy of the Temple of Jupiter Stator, in Rome—we are reminded that no condition of site was an obstacle to the ancient Romans; the buildings on the Capitol, and in the great Forum, presenting overcomings of every obstacle as to site in hanging, terraced, or any other levels; and that the corporation surveyor at Liverpool enjoyed a great advantage in the site for the display of the building he should adapt to it.

The general aspect of the building now completed, as seen from all the commanding points of view which are available, is that of a reduced copy of our National Gallery in London, without the pepper-boxes, and with the flanks telescopically folded up. The returns of the wings present the hollow sham of plain brickwork, contrasting disadvantageously with the pretentious appearance of the stone front. The portico has an inner row of four columns, two intercolumniations being omitted to gain width in the entrance; the floor of the portico being attained by steps from the footwalks enclosed within screen walls, and landing at each end of the portico, and not in the middle. The principal entrance doorway is of colossal proportion, and contrasts unfavourably with the simplicity of the rest of the building, by its over-enriched and enlarged ornamentation. The remainder of the front is enclosed with a stone balustrade and iron gates; the form of the balustrade to all the parapets of the terrace being very ugly, and top-heavy, and not unlike the usual upholsterers' leg of a dining-room table.

The two wings have each two Corinthian pilasters, irregularly spaced, the two in the centre standing forward about two feet, and intended, if we may believe the published view, to have colossal figures on the parapets, which would utterly destroy the effect of the building. Between them is a niche, with pedimented cornices on carved trusses; above all are small panels and wreaths. The flanks between the central portico and wings have each five windows, with horizontal cornices or trusses, above which are small panels, with large wreaths in them. The roofs are screened from view by lofty attics on parapet walls.

On entering the building the visitor passes into a vestibule, 31 feet by 23 feet, with a flat panelled ceiling; beyond the vestibule is the central hall, the principal architectural feature of the interior; and beyond the hall is the principal staircase. The central hall is divided at each end from the vestibule or staircase by a screen of two Doric columns in antis. It is 90 feet long, 53 feet wide, and 46 feet high. It is divided basilica-wise, into three portions,—a centre or nave, and the side aisles or corridors; the latter are separated from the nave by an arcade, which supports the gallery floor, and the Ionic columns which carry the roof. At each end of the hall the entablature on these columns is continuous, but at the sides it is broken round each column, and from the cornice spring arches, which are groined into vaults over the gallery. Over the centre of the hall or nave the ceiling is flat, coved down to the cornice with panels, the mouldings of which are enriched. Three of these panels are glazed, but the principal light is derived from seven round arched windows on each side. Between the columns in the gallery is a stone balustrade. On the ground-floor, to the right of the principal entrance, is the door to the free library, which apartment was opened to the public on the 3rd instant. The reading-room, which is 110 feet long and 50 feet wide, is divided into two portions by two Doric columns in antis near the south end, and here are windows looking into Shaw's Brow. The remainder of the

* It is asserted that the plan adopted is that of the design selected in the competition: but into this question we are not in a position to enter.

room is lighted by two large skylights, and by windows in an attic raised upon panelled segmental arches. The very heavy appearance of the Doric entablature, which is continued all round the room, and the squat effect of the segmental arches, diminish very much the effect of this room. The proportions are sufficiently massive to have admitted of greater height, and ventilation could have been better provided for. The aspect generally of the room is that of a large cabin on board ship, where height was of the greatest consequence. Adjoining the reading-room is the students' reading-room, 40 feet by 28 feet; and running northwards from this parallel to the principal reading-room, and along the eastern end of the building, is the reference library, 75 feet by 27 feet, fitted up with bookcases, in two tiers, the upper accessible from a light iron gallery: the total accommodation provided is estimated at 100,000 volumes. In the basement of this portion of the building are the rooms for the reception of the books, and for the classification and binding.

On the left of the entrance is the museum, which consists of five rooms upon the ground-floor, and also upon the upper floor. They are being fitted up for the reception of the Derby Museum, the handsome mahogany cases, on carved legs, for the reception of the minerals and fossils being manufactured by Messrs. R. Anderson & Sons, of Bold-street. The basement, under three of the rooms of the museum, have been prepared with solid floors for the reception of sculpture, and other heavy articles: the others will be used as work-rooms by the curator.

In the extreme north-east corner of the building, on the ground-floor, are three class-rooms, and a committee-room; above the committee-room is a lecture-room, 28 feet by 25 feet; and over the class-rooms a larger room, also for lectures, which is intended to accommodate nearly 350 persons.

Not the least important part of the building is that designed to accommodate a collection of specimens and inventions, and now called "The Gallery of Science and Inventions." It occupies 83 feet by 50 feet, a space which was intended to be left for future extensions. Mr. Brown, however, considering that in a town like Liverpool, practical science ought to receive more attention than it was likely to have, unless special provision were made for the purpose, thought it was desirable to convert this space to the purpose. The Gallery of Science and Inventions will consist of a floor on the level of the basement story, and of two galleries on the level of the ground floor and upper floor, each gallery 218 feet by 12 feet.

The entire cost of the building, including the fittings, lighting, warming, and ventilating, will be nearly 40,000*l.*, and the whole will be defrayed by Mr. Brown. The buildings were erected under the direction of the Corporation Surveyor, Mr. John Weightman. Messrs. Holme & Nichol are the contractors for the building. The sub-contractors are—for masonry, Mr. Hugh Yates; slating and plastering, Mr. John Bromley; plumbing and painting, Mr. Thomas Holt; glazing, Messrs. Saul, Moss, & Co.; the plate glass being supplied by the London & Manchester Plate Glass Company; iron work, Messrs. Weber & Co.; the fittings for lighting being executed by the Gas Company, and the apparatus for warming and ventilating by Mr. Alderman Bennett. Mr. Jacob Crivie is the clerk of the works.

The area actually covered by the building is 3,770 yards.

The library was thrown open to the public on the 3rd instant, this being the only portion of the building completed. The approach to this library is temporarily up a back way at the east end of it. The result of the first day's experience was duly celebrated by the local press. We are unable to endorse the glowing account that was given, but are quite willing to believe that in a little time the weak parts of the arrangements will be discovered, and that the Public Library of Liverpool will become all that its munificent founder desires it should be.

THE LATE MR. GEORGE BAILEY, ARCHITECT.

We record, with regret, the death of Mr. George Bailey, which took place at 13, Lincoln's Inn-fields, on the 17th inst. Mr. Bailey was a favourite assistant of the late Sir John Soane; and, on the death of that gentleman, was appointed, under the will, the first curator of the Soane Museum. Mr. Bailey was a fellow of the Royal Institute of British Architects, and some years ago acted with great zeal as its honorary secretary.

In the formation of the Architectural Publication Society, in 1848, Mr. Bailey took much personal interest in it, being present at the first meeting of the promoters, and ever after affording all the information he had collected from time to time, or could procure from the valuable library under his control. Thus most of the biographies of the English architects comprised in the "Dictionary of Architecture," now in course of publication, have been rendered more perfect than was hitherto the case. It is hoped that the honorary secretary for the Dictionary may still have permission to refer to Mr. Bailey's note-books for further accessions to that valuable work.

Mr. Bailey was in his 69th year when he died. He was buried at Highgate on Saturday last.

We would express a hope, without meaning the slightest reflection on the course pursued by the late Mr. Bailey (who did what was considered best), that, in appointing his successor, the trustees of the Soane Museum will seek to make such arrangements as will ensure to the public the freest access possible, and render the collections and books more widely useful than they have been. We have long urged this point, and, we hope, not without effect on the minds of some of the trustees.

PROPOSED EXHIBITION IN DUBLIN.

The Royal Dublin Society, on the recommendation of various lovers and owners of works of art, have determined to hold an "Exhibition of the Fine and Ornamental Arts" during May and the three following months of 1861. The object is to collect the *chefs d'œuvre* of painting and sculpture, and to exhibit them with drawings, engravings, photographs, medals, objects of vertu, elaborately-wrought plate, works in precious stones and metals, in porcelain, silk, velvet, lace, tapestry, and works in which art forms a material element. The guarantee fund, to cover the expenses in the event of a deficiency in the receipts, was originally fixed at 5,000*l.*, but has already grown to upwards of 9,000*l.*

FOUNDATION OF AN ARCHITECTURAL ASSOCIATION IN MANCHESTER.

A numerously-attended meeting of gentlemen connected with the architectural profession was held on the evening of Monday, the 17th inst., in order to consider the desirability of establishing an Architectural Association in this city.

Mr. G. Shaw Aitken having been called to the chair, it was proposed by Mr. Alfred Darbyshire, seconded by Mr. R. Walker Aitken, and unanimously carried, "That, in the opinion of this meeting, it is desirable that an Architectural Society be formed in Manchester, to be called the 'Manchester Architectural Association.'"

A code of laws was then brought forward and considered; when it was proposed by Mr. Webster, seconded by Mr. Joseph Shaw, and unanimously carried, "That the laws submitted to the meeting be the basis of the Association's constitution."

Office-bearers, and a committee of four, having been elected to serve until the last ordinary meeting in the month of March, the business of the meeting was concluded by a vote of thanks to the chairman.

Mr. R. Knill Freeman is the honorary secretary.

SCHOOLS OF ART.

The Stourbridge School.—The annual meeting of this school took place in the Corn Exchange, Stourbridge. Lord Lyttelton presided, and there were present in the room some 400 persons. The report of the masters stated that the number of students continued to increase. Since the last council meeting 152 students had attended the classes at the central school, and 622 had received instruction at public and private schools, making a total of 774 under instruction during the year—a larger number, it was said, in proportion to the inhabitants than that furnished by any town in the United Kingdom. Seven medals had been awarded, and sixteen pupils had passed their examination in advanced free-hand drawing, practical geometry, and perspective. Of these eleven had received certificates, and five prizes. Owing to the raising of the standard of excellence, the master recommended that those of the pupils who had remained a certain time in the school should receive prizes and certificates of merit from the Council. The master concluded his report by some remarks upon a letter read by the Duke of Argyle, when addressing a meeting of Associated Mechanics' Institutions in the Free Trade Hall, Manchester, and urged the importance of art to those engaged in the glass trade of the neighbourhood. The fees from pupils during the year ending the 31st of September last, were 106*l.* 3s. 9d.; subscriptions, 46*l.* 15s.; with sundries, 12*l.* 9s. 11d.; making a total of 165*l.* 18s. 5d. The total expenses were 133*l.* 15s. 11d., which left an excess of income over expenditure of 32*l.* 2s. 7d. There is a building debt of 200*l.* The prizes were distributed to the students by Lord Lyttelton.

The Carlisle School.—The adjourned annual meeting of subscribers to the Carlisle School was held in the Town Hall. The Mayor presided; but the meeting was exceedingly small, the only other gentlemen present being three, besides the master, the treasurer, and the secretary. The school, however, is now in a somewhat better condition than it has been since its commencement. There are 121 general pupils, 385 pupils taught in public schools, and 84 in private schools. The ordinary receipts during the year were 36*l.* 11s. 10d., while the expenditure had been 51*l.* 16s. 10d., thus leaving a deficit of 15*l.* 5s. The Treasurer stated that hitherto the receipts had been more, but this year an arrear of rent had to be paid. He hoped this deficiency in the revenue account would not be permanent, although they could hardly look to being able to clear their way entirely.—Mr. Lees read a letter which he had received from the Art Union of London, stating that the Council, being anxious to assist in the cultivation of design and the practice of fine art, as applied to manufactures, and especially with reference to the Schools of Art, proposed, with the concurrence of the Department, to set apart the sum of 100*l.* each year, to be offered to the pupils in these schools on certain conditions. There will be five prizes of 10*l.* each, and ten of 5*l.* The subjects of competition suggested are:—Drawings and models of animals or groups of animals from the life; models of clusters of fruit, &c.; a book-case; a sideboard; a bronze candelabrum; clockcase for a mantelshelf; candlestick for ditto; pedestal for reduced bust of Clytie; bust of the Belvedere Apollo; silver prize cup; majolica dish; garden flower vase; tazza, &c. The master said he did not know whether to think of it as a reproach to Carlisle, but they always seemed on the point of closing. There appeared to be an apathy as to the school. The public should be made aware that they did not attempt to make artists: they attempted to make useful men. If they got a bricklayer, they wished to make him know the value of his work and make it more ornamental; and the same with carpenters and others. There was no more simple ornament than different colours of bricks; that is a real ornament; and, if they could make a man feel that his work was ornamental and pleasing to the public, they gave an interest to the school which it had not hitherto possessed. He wished they could get the public to feel that they were useful members of society: at present they were only considered ornamental.

THE CONDITION OF BRIGHTON.

With reference to the recent correspondence on the drains of Brighton, and the remarks in our own pages, a correspondent, "A Resident," says:—

"The most important fact elicited during the discussion on the subject is this—*that there is no medical officer of health in this town.* That is a want which must be deplored on behalf of every locality where the want exists; and, so far as Brighton is concerned, it is to be hoped that the application to the General Board of Health, recently announced, will result in the appointment of a 'sanitary superintendent' for the town. The duties of such a public officer are well described in a paper on 'Public Records of Mortality and Sickness,' read by Mr. H. W. Rumsey, in the Public Health Department of the *Social Science Association*, and printed in the 'Transactions' for 1859.

Much might be done for the improvement of the health of towns by employing the services of a public officer possessing the necessary qualifications for the duties of such an important and responsible post, and entrusted with *full powers*: much could be done in Brighton, doubtless, as in other places, by enforcing obedience to sanitary laws, which are now neglected because no compulsive agency exists.

The light of sanitary science is beginning to dawn upon men's minds in a degree not contemplated a quarter of a century ago. It is devoutly to be desired that the self-same light may at length penetrate and so far illumine the obscurity in which the deliberations of Town Councils are too generally enveloped; so that the members, individually and collectively, may be enabled to distinguish their true course regarding the vital interests of the several localities over which they preside; and that these bodies—not well esteemed

in general—may, by placing themselves under authoritative direction in matters relating to the sanitary improvement of their respective towns, recover—in one instance, at least—the confidence that they have lost by the mal-administration of municipal affairs with which they are entrusted."

"STAINING WOOD."

OUR correspondents are not unanimous in approval of the recommendation to use the stain before the size, given in a communication signed "G. R. B. Arnott." One of the dissentients, W. H. E., says,

"Timbers stained previously to sizing are of a heavy, dead, blackish tint, instead of the nice varnished light-nut-brown hue produced by the proper treatment [size first, next the stain, then varnish]. Any one using stain and varnish without a size coat underneath will find any number of coats of varnish entirely thrown away, although the stain will have so sunk into the wood as to prevent any amount of *scratching* from getting it off."

We are disposed to believe that with the best description of stain and good wood the course first recommended is calculated to produce the best and most lasting work. But if common stains be used, or the wood be of unequal texture, the size should be applied *before* the stain.

WANTED! THE ARCHITECT OF THE EDUCATIONAL BOARD.

SIR,—As the editor of the *Builder* is supposed to know every thing on every subject, I make bold to ask you to give me some information relative to that mystery, the invisible architect of the Privy Council Board of Education. I used to call at [illegible] his office in a morning, but, alas! it was a desert. At last, being there at twenty minutes past two, I met with a clerk who had just arrived. Cross-examination elicited from the clerk that clerk and master were supposed to turn up about two o'clock. Now, as it was then twenty minutes past that hour, and as I have again called ineffectually to-day at a quarter past three, I am inclined to believe that it is simply a pleasant fiction of the clerk. We all know how conducive solitude is to the cultivation of the imagination, and I think it is not unfair to attribute his assertion to this cause.

The invisible girl, who astonished the good folks of London some few years since, was both amusing and instructive. I am afraid the invisible architect is just the reverse.

ONE OF SOME HUNDREDS WHO WOULD BE GLAD OF THE PLACE, IF TOO HEAVY FOR THE PRESENT OCCUPANT.

THE ADULTERATION OF LINSEED OIL.

SIR,—The communication from "A Friend to the Unemployed," that appeared on the 1st instant in your valuable journal, has had the effect of causing considerable uneasiness to myself and others interested, who believe your correspondent wrong in remarking that "they (the sellers of linseed oil) *run no risk and are not responsible for the work spoilt by their rubbish*." This statement must assuredly have been made without reflection; and, if allowed to pass unrefuted, is, I think, calculated seriously to injure, and not in the least favour, the interests of the unemployed or expectations of the trade.

The Legislature has wisely interfered to prevent the adulteration of food: surely, then, the tradesman, who is bound to uphold his respectability in order to obtain the necessaries of life, is not to be impoverished and prevented from so doing, or submit to have spurious articles foisted upon him, without remedy of some kind. If, however, your correspondent has authority for making his statement to the contrary, then it must be admitted a serious flaw exists in the laws of this country, and all interested should at once petition Parliament to remedy the defect. Unfortunately, there is already abundant proof that the colour merchants generally vend worthless and trashy compounds instead of genuine materials; and this fact being established, it is in my opinion an imperative duty for the painters, as a body, to place themselves in a right position with the public, by proving satisfactorily their noncomplicity with the perpetrators of the existing novel yet unprincipled system of fraud. It is idle to argue that the merchant and tradesman are alike victimized by the manufacturer, the former being in a position to ascertain, by reference to his invoice-book, who supplied the adulterated goods; and, failing to institute proceedings to end the nefarious practices of those who have so long and persistingly preyed on the community, I consider the vendor clearly identifies himself with the fraud, and becomes both legally and morally responsible for the loss sustained by unsuspecting customers. I fully anticipated long since that some eminent and competent authority would have taken the matter in hand; but, assuming the attention of our scientific men to be engrossed by occupation of a more pleasing or lucrative character, I desire, with your permission, to offer these remarks with the intention of arousing the trade generally to a proper sense of the interests they have at stake, and inducing them to countenance a public meeting for arranging the most satisfactory mode to all concerned, of submitting samples of the materials supplied during the past twelve months for analyzation. It occurs to me, if the necessity of inquiry is made apparent through the medium of the *Builder*, the proposed movement will at once attain that extent of metropolitan and provincial publicity desirable and requisite to ensure active co-operation from all branches of the building trade, and enable the committee, when appointed, to obtain impartial reports from two or more of the most eminent chemists in the kingdom; the only mode of procedure, in my belief, calculated to afford satisfaction alike to the employer and employed.

As a case in point, let me instance one among several personal causes of complaint. I ordered from a leading firm in the trade a stock of best quality oil, lead, and driers, paying the highest market price for the articles. With colour prepared from these materials, eight tenroomed compo-fronted houses were painted inside and out. Within a fortnight after their completion, I was astounded by the receipt of a note from my employer, stating that he "had lost all confidence in me, and had been compelled to employ a surveyor to go over the work, the tenants having expressed their intention of leaving the houses in their occupation, owing to the *smell, appearance, and non-drying properties* of the paint used by my men." Fearing from these remarks that my workpeople had neglected their duty, I immediately visited the place, and cannot find language sufficiently strong to express my feelings of indignation and disgust on discovering the labour well executed, and that the fault lay only with the material. The entire surface was "blotchy and tackey," and, as the only means of saving my reputation, I at once undertook to do the work over again. Fortunately, the the surveyor who attended was a gentleman experienced in my business; and, from his favourable representations to the employer, I, after considerable demur, obtained permission to do so. At the present date (nine months after the work has been completed a second time) the light stone fronts present a streaky, dirty, fawn-coloured appearance, and the blotches, after receiving five (and in some cases six) coats, have "sweated out" to such an extent as to render their position too readily discernible to the practised eye of a person acquainted with this branch of the building trade. Regardless of time and expense, I made every reparation in my power, for the annoyance occasioned by the colour merchants' supplying me with improper materials; and consequently, as proof of the feeling entertained by employers generally in the matter, I have recently received the mortifying intelligence that my highly-valued customer has transferred his patronage to another person, who is now actively engaged on work which has for years been entrusted to my care. Having suffered damage to an unascertained extent, I assume I am entitled to recompense from the eminent firm with whom I dealt (who either by complicity or gross neglect, have occasioned me the double loss of money and character); and it is my intention, not only to agitate to the utmost, but, whether my brethren join or not in the proposed movement, to submit the question on its merits to the decision of a legal tribunal.

AN INJURED TRADESMAN.

P.S. The secretaries to the Painter Stainers' Company and various metropolitan trade lodges have been written to, and on receipt of their replies a public meeting will be convened, due notice of which will appear in the *Builder* and daily papers.

Books Received.

The Nuisances Removal and Diseases Prevention Acts of 1855, 18 *&* 19 *Vic., c.* 116 *and* 121. *Second Edition. With the Amending Act,* 23 *&* 24 *of Vic., c.* 77. By W. G. LUMLEY, Barrister-at-Law. London: Knight & Co., 1860.

WE cannot better reply to the correspondents who ask us every week how to get rid of a nuisance than by referring them to Mr. Lumley's edition of these enactments, and by adding, in the words of the appendix,

"1. Under these Acts any premises in such a state as to be a nuisance, or injurious to health, may be ordered, by two justices in petty sessions, or by a stipendiary magistrate, to be made safe and habitable, to be paved, cleansed, whitewashed, disinfected, or purified; sufficient privy accommodation, means of drainage and ventilation, may be required to be provided; and, while any house or building is unfit for human habitation, in the opinion of the justices, the using it for that purpose may be prohibited till the causes rendering it unfit for habitation have been removed.

2. Any pool, ditch, gutter, watercourse, privy, urinal, cesspool, drain, or ashpit, so foul as to be a nuisance or injurious to health, may be ordered to be drained, emptied, cleansed, filled up, amended, or removed, and a substitute provided.

3. Any animal so kept as to be a nuisance or injurious to health may be ordered to be kept in a cleanly and wholesome state, and, if that be impossible, the animal may be removed.

4. Any accumulation or deposit which is a nuisance or injurious to health may be ordered to be carried away."

Miscellanea.

ANOTHER COLLIERY EXPLOSION.—A shocking explosion has taken place at Hetton Colliery, near Durham, whereby twenty miners are said to have lost their lives. This colliery is the property of the Hetton Coal Company, and is situated about nine miles south of Sunderland.

DINNER OF ASSOCIATION OF FOREMEN ENGINEERS.—On the 15th inst. the eighth anniversary dinner of the Association of Foremen Engineers took place at their rooms, 35, St. Swithin's-lane, City. About ninety members and friends sat down. In the absence of Mr. H. Grissell, Mr. Joseph Newton, of the Mint, occupied the chair. A report read in connection with the toast of the evening, namely, "Prosperity to the Association of Foremen Engineers," showed that the receipts since establishment in 1852 had been 486*l.* 1s. The disbursements were,—To unemployed members, 110*l.*; deaths, 40*l.*; incidental, 113*l.* 18s. 6d. Deducting these disbursements (263*l.* 18s. 6d.) from 486*l.* 1s., left balance of 222*l.* 2s. 6d.; with interest, 236*l.* 17s. 2d. Surely, as we have often before said, there are too many of these societies. If united, the cost of management would be greatly reduced, and the disposable funds would be much larger.

THE BUILDING TRADE AT SOUTHAMPTON.—About 2,000 artisans, mechanics, and labourers, are out of work at Southampton, owing to the slackness of ship and house building. The slackness in the building trade arises chiefly from the high price of bricks, comparatively few having been made this year in consequence of the wet weather.

FATAL ACCIDENT AT CRONSTADT.—A St. Petersburgh letter states that at Cronstadt recently a bridge across the entrance to a dry dock suddenly gave way at a moment when thirty persons were passing. As they fell from the height of seventy feet on the granite bottom of the dock twelve were killed on the spot, and the rest so seriously hurt that they are not likely to recover.

STATUE OF SIR WILLIAM PEEL, K.C.B.—Mr. William Theed has executed, in marble, a statue, 7 feet in height, of the late Sir William Peel, K.C.B., of the naval brigade, at the expense of the Right Hon. Frederick Peel, M.P. On the 22nd it was placed in the Painted Hall, Greenwich Hospital.

STREET ROLLING IN PARIS. — Steam rollers have recently been set to work in some of the streets of Paris, forming a great contrast to those unwieldy-looking machines, drawn by eight horses, which every visitor to Paris must have seen at work, crushing down the stones at the Champs Elysées.

THE CO-OPERATIVE MOVEMENT AMONGST THE WORKING CLASSES.—The impetus which has been given to manufacturing co-operative societies by the large dividends that have been declared by the Bacup and Wardle Manufacturing Society, is said to be felt in all directions. There are five co-operative mills in progress according to the *Manchester Courier*, and a sixth has been projected by the directors of the Calliard's Manufacturing Society. This company having an estate of 33 acres, and a river running through its centre, upon which there is already a woollen mill at work, have projectod a mill for 20,000 spindles of cotton weft, to be erected on the opposite bank to the woollen mill. The capital now raised is 20,500*l.*, and it is proposed to raise 30,000*l.* more, in 5*l.* shares, to be raised in calls of 1*l.*, to be paid in February next, and 1*l.* every six months afterwards, until the whole is paid up. The plan is, however, subject to the approval of the shareholders at their meeting in January next.

MONUMENTAL.—A memorial of the late Mr. Wallace Hall, of Ross, is about to be erected from a design furnished by Mr. G. W. Sadler, of Cheltenham. The design consists of a spiral column, about 30 feet high, wrought in Box-Bath stone, with Forest stone base, having a drinking-fountain attached, with a basin of polished red granite. Messrs. Wingate & Son, of Gloucester, offered to execute the whole for 80*l.*——It has been resolved to erect the Tyndale memorial column on the highest point of Stinchcombe-hill. Sir George Prevost has promised to give the land. The exact shape of the monument has not been decided upon, but it has been resolved that a parabolic reflector should be placed on its summit, as suggested by Earl Ducie.——The Wallace monument executive sub-committee have applied to the town council of Stirling, for liberty to commence the erection of the Wallace monument, the necessary funds being now on hand. It seems, however, that it is only the main tower which is intended to be erected at present, and which it will take three years to complete. The sum of 1,500*l.*, according to the *Falkirk Herald*, is still required in order to complete the monument according to Mr. Rochead's design.

VALUE OF A "NEW RIVER" SHARE.—Recently, at the Auction Mart, two 36th parts or shares in the king's moiety of the New River Company, being virtually an original half-share, were sold. The auctioneer stated that the undertaking was commenced in 1608 and completed in 1613, and, the resources of Sir Hugh Myddelton being exhausted before the work was completed, he applied to the Crown for additional money to carry out the work, and made over half the property in return for half the expenses being paid. In 1636, Charles I. granted his moiety back to Sir Hugh Myddelton on condition of an annual payment of 500*l.* which payment is charged on the king's shares, and distributed over them by the company before paying a dividend. For 18 years after the undertaking was completed there was no dividend paid, and the shares were given away gratis. In 1793, Pennant says his shares sold for 10,000*l.* The lot sold for 8,700*l.* making the value of a whole share 17,400*l.* This makes the value of the "adventurers'" shares in the property, from not being charged with the payment to the Crown, about 20,000*l.*

Engineer of Great Western Railway Company.—Mr. John Fowler, C.E., has been appointed consulting engineer of the Great Western Railway, in the room of the late Mr. Brunel.

The Manchester Operative Painters.—A meeting of these operatives has been held to memorialize the masters on the subject of wages. It was suggested in the memorial agreed to that the hour system should be universally adopted, and that payment be at the rate of 6d. per hour. This would be equivalent to an advance of about 10 per cent. in the wages of the men.

Clerkenwell Workhouse.—For some days past some alarm has prevailed among the inmates of Clerkenwell Workhouse, Coppice-row, in consequence of the subsidence of the front centre wall, which is supposed to have been caused by the excavations carried on along Coppice-row for the formation of the Metropolitan Railway. At this point of the line the ground has been excavated to a great depth. Mr. Jay, the contractor, at once adopted measures to prevent any further accident.

Railway Wonders.—The *Times* remarks,—"Every year some fresh line is opened which must yield its fresh receipts before fresh revenue can be forthcoming. In 1854, the aggregate of railway capital was, in round numbers, 286,000,000*l.*; in 1859, it was 334,000,000*l.*; having increased as nearly as possible to the extent of 50,000,000*l.* a year. Yet the receipts have not only afforded a dividend on this increased sum, but a better dividend than formerly, and there never was a year more auspicious than the soaking and dreary twelvemonth through which we have just passed."

Burning of a Sydney Theatre.—The *Australian Mail* states that one of the most extensive and disastrous conflagrations that has ever occurred in Sydney broke out on the morning of October 3rd, near the corner of King and Castlereagh streets, causing the entire destruction of the Prince of Wales theatre and of several adjoining buildings, and resulting in the death of three persons, and in the serious injury of others. One of the adjoining offices was constructed of iron, which was quickly "demoralized," and reduced to wreck, by the intense heat.

Extension of the Metropolitan Underground Railway.—At a meeting of the Paddington representative council, on Tuesday, in last week, the application to be made by the Metropolitan Underground Railway Company, in the ensuing session of Parliament, for an extension of the subterranean line, was brought under consideration. The parish surveyor, Mr. Merry, exhibited plans which had been lodged with the vestry clerk, to ascertain the opinion of the vestry on the proposed extension from Praed-street to Notting-hill-gate, with a branch from Uxbridge-road, under the Broad-walk to Brompton, and with a junction in Hammersmith road, for the purpose of ultimately extending the same to Hammersmith. The meeting resolved to remain neutral.

The Drainage at Malton.—The drainage works at Malton, noticed in your publication of the 15th inst., are being carried out for the Malton Board of Health, under the superintendence of Mr. John Gibson, architect, Malton, who has prepared a survey of the town to a scale of 10 feet to one statute mile. The drains are laid with glazed stoneware sanitary tubes, socketed at the joints (supplied by Messrs. Barry & Son, of Scarboro'), the largest tubes being 18 inches diameter; these are joined with 15 inches diameter, then 12 inches diameter and 9 inches diameter for the trunk drain: branches to blocks of house are 8 inches diameter. In two of the streets the drain will be 12 feet deep for a short distance: the average depth of the drains will be about 6 feet, the estimated expense 1,400*l.*—J. G.

Strike of the Nailers of South Staffordshire.—A strike has just commenced in the South Staffordshire district, by which some 3,000 men are thrown out of employ. The strike has arisen out of a trades' union dispute. Mr. Walker took on a man not a member of the Horse-nail Makers' Trades' Union. His men thereupon demanded his discharge or an advance of wages. Their demand was not complied with, and the 300 men employed by him left their work. The masters held a meeting a few days ago, and resolved not to give any more work to their men till Mr. Walker's men returned to work. The men upon this throughout the district demanded an advance of 6d. per 1,000 on the nails they make, and thus a general strike has commenced, the masters being determined not to give such a large advance. It is stated a horse-nail makers' wages average 25s. per week.

Kilkenny County Surveyorship.—The lord lieutenant, according to the *Carlow Sentinel*, has appointed Mr. P. Burchaell, the county surveyor of Carlow, as successor to the late county surveyor of Kilkenny.

Fall of a Building.—The barley-chamber of a malt-house, in Newmarket, has suddenly given way; its contents, between 800 and 900 coombs of barley, having been precipitated on to the working floor of malt. The beams and joists are said to have clearly indicated that the building was not adapted to sustain the weight of so large a quantity of grain.

Proposed Carriage-road across Primrose-hill.—At the weekly meeting of the Marylebone vestry, it has been resolved that a memorial be presented to the chief commissioner of public works praying that he would cause a carriage-way to be made from the foot of Barrow-hill, across the eastern side of Primrose-hill, to the junction of the road on the St. Pancras side leading to Chalk-farm. Mr. Freeth, in moving the resolution, stated that the parish of Marylebone had been so built upon that it was a species of *cul de sac*, and some of the districts were blocked up with gates, so that the inhabitants had great difficulty in moving from one place to another. The walks which now existed in what was called Albert-park and once Primrose-hill were pleasant enough by day, but at night they were positively dangerous, and scenes of the worst description were taking place there continually.

The Surveyor to the Bath City Act Committee.—A discussion is going on in this committee on a motion that Mr. Parfitt, their surveyor, have six months' notice to quit. The mover and others charge the surveyor with general neglect. The mover, Mr. Cox, stated that he was "not systematical, not methodical, not active, not diligent, and not truthful." Others defended the surveyor, and blamed the surveying committee, who were ever running after him and interfering with his duties. One member said the great difficulty in the case was to know whether the surveying committee had charge of the surveyor, or the surveyor of them. It was not exactly clear; but, at any rate, it seemed that the committee had taken charge of the surveyor. He always had protested against it as an unsound principle. The discussion was adjourned, the understanding apparently being that the surveyor should have time to reply to the charges against him.

St. Bartholomew's Hospital.—On Monday last, a deputation from this famous metropolitan hospital, which was founded upwards of 750 years ago, waited upon the Lord Mayor (Cubitt), at the Mansion House, and apprised his lordship that the house committee of the institution had passed an unanimous resolution recommending him to the general Court of Governors as a fit and proper person to fill the office of President of the hospital, which had become vacant by the recent death of Alderman Sir George Carroll. The gentlemen composing the deputation were Mr. W. Foster White, the treasurer of the hospital; Mr. Serjeant Payne, Mr. Hooper, Mr. Alexander Jones, Mr. Chas. Hill, F.S.A. Mr. James Bentley, Mr. Daniel Britten, Mr. Wm. Gilpin, Mr. Anderton, and Mr. John Morley. The Lord Mayor, while appreciating this mark of confidence and respect, hesitated at first to assume the responsibility of the office; but on the deputation representing to his lordship that the functions incident to the position of president would occupy but little of his time, and that it was simply an honorary distinction they wished to confer on him, he readily and cheerfully consented.—Let us here note that the Lord Mayor's entertainment in honour of Lord Clyde, and at which the Commander-in-Chief, the Duke of Cambridge, attended, passed off in the most admirable manner. The Lord Mayor had a good opportunity and took full advantage of it.

TENDERS

For six dwelling-houses at Saltburn-by-the-Sea, Cleveland; Mr. W. Peachey, architect:—

Robson	£1,401	17	4
Allen	1,372	12	8
Kemp & Abdale	1,287	3	0
Brown	1,281	5	0
T. & C. Elwin	1,278	9	0
Windale & Son	1,228	13	0
Pearson	1,227	2	6
H. & G. Chapman (accepted)	1,220	0	0

For chambers in Gracechurch-street; Messrs. Wailes & Sparkes, architects:—

Auley	£5,586	0	0
Henshaw	5,348	0	0
Axford	5,340	0	0
Mansfield & Sons	5,229	0	0
Brown & Robinson	5,197	0	0
Rider	5,152	0	0
Ashby & Sons	5,139	0	0
Conder	5,039	0	0
Hack & Sons	4,777	0	0

For making a road across the Haling Park Estate, Croydon; Messrs. W. J. Blake & John Berney, joint surveyors:—

Bull	£659	10	0
Ayers	644	5	7
Stevens	601	14	7
Leeks	599	2	8
Jevvus	599	0	0
Collier	571	13	9
Millearn	559	13	9
Clark	513	1	6
Gregory	506	0	0
Hawkes	463	0	0
Sharon	450	0	0
Potter (too late)	425	15	0

For repairs, &c., to house and premises, No. 22, New Ormond-street, for Miss Louisa Twining; Mr. H. A. Darbyshire, architect:—

Brake	£364	10	0
Stephens & Latta	345	0	0
Sewell	337	0	0
Greenwood	295	0	0
Sutton	249	0	0
Green	212	0	0

For the erection of a dye-house at Hoxton, for Mr. J. L. Wilson; Messrs. R. Tress & Chambers, architects. Quantities supplied by Mr. Raggett:—

Lawrence	£2,570	0	0
Brass & Son	2,379	0	0
Axford & Co.	2,351	0	0
Deards	2,225	0	0
Coleman & Son	2,185	0	0
Macey	2,154	0	0
Browne & Robinson	2,138	0	0
Conder (accepted)	2,115	0	0

TO CORRESPONDENTS.

M. A. B.—J. L.—G. B.—W. B.—W. H. E.—J. A. P.—E. F.—F. R. W.—W. T.—J. N.—A. W. Dorset (see the "Nuisances Removal and Diseases Prevention Acts" of 1855, section 27, for the course to be pursued. There is no specified distance).—F. M.—W. P.—M.—G. C. H.—D. B. (next week.)—A. M. (ditto.)—F. S.—Mr. B.—H. W.—A Competitor.—J. R.—W.—T. B.—P. J. M. P. J. B.—H. B. S.—M. W.—R. B.—T. J. H.—D. B.

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

The Buyer's Desideratum.—"The buyer's *desideratum* is to find an establishment where will be presented to him ample choice of artistic designs, without having forced upon his attention a host of mere ingenious ones, and destitute of any other merit, with a tariff of prices adapted to the means of the economic or those to whom price is no object. Such an establishment is that of Mr. J. W. Benson, situate at 33 and 34, Ludgate-hill, whose recent enlargement of his premises has made his show-rooms more conspicuous than any other in the neighbourhood of St. Paul's. His four windows contain such a variety of gold and silver watches as to leave nothing to be desired but the money to buy them with. The high standing of Mr. Benson as a London manufacturer must secure him a large amount of public patronage."—*Standard.*

Benson's Illustrated Pamphlet, post free for two stamps, is descriptive of every construction of watch now made. Watches safe by post to all parts of the globe.—*Advertisement.*

ADVERTISEMENTS.

MR. WILLIAM ELLISON,
CONSULTING SURVEYOR, late of STAINSBY-ROAD,
Has taken Offices at
13, FENCHURCH-BUILDINGS, FENCHURCH-STREET, E.C.
Where he continues to advise BUILDERS
On BREACHES of CONTRACT, DISPUTED ACCOUNTS, &c.

BOROUGH of TYNEMOUTH LOCAL BOARD of HEALTH.—APPOINTMENT of BOROUGH SURVEYOR.—Notice is hereby given, that the Local Board of Health of the Borough of Tynemouth, will, at their meeting on WEDNESDAY, the 16th day of JANUARY next, appoint a SURVEYOR for the said Borough. The person to be appointed to this Office must be experienced in surveying and levelling, qualified to lay down plans and sections, and to prepare estimates of sewerage works, new streets and roads, and other public works which it may be the duty of the Board to carry into effect; and competent to judge of the proper execution of such works. He will be required to examine and report to the Local Board on all plans of buildings and intended new streets, and to inspect the same during their construction; and to advise the Board on all private sewerage, and other sanitary arrangements requisite, to adapt existing buildings and streets to the requirements of the Public Health Act. To direct and superintend the repair, maintenance, and cleansing of all public streets and highways within the Borough; to check all accounts for materials and labour chargeable to his department, to prepare pay-sheets of wages, and tradesmen's accounts; and generally to act under the direction of the Council, and of the several Committees thereof. The person appointed will not be permitted to take any professional employment within the limits of the Borough, but may, with the consent of the Public Health Act Committee for the time being, undertake such professional engagements beyond the Borough as will not interfere with the proper discharge of his official duties. The salary is 200*l.* per annum. Further information may be obtained on application at the Town Clerk's Office, 22, Howard-street, North Shields, to whom applications and testimonials are to be sent on or before FRIDAY, the 11th day of JANUARY, 1861, at SEVEN p.m. addressed to "The Public Health Act Committee," and endorsed, "Application for the Office of Borough Surveyor."—By order,
THOMAS CARR LIETCH, Clerk to the Local Board.
Borough of Tynemouth, 20th December, 1860.

MR. W. F. HAMMOND, Auctioneer, Land and Estate Agent, of 3, Carey-street (opposite Lincoln's-inn Gateway, W.C.), has an OPENING in his office for a well-educated YOUTH, as a pupil. Premium expected.